FOR OFFICIAL USE ONLY.

Vol. 13. No. 4. pp. 117-152. April, 1943

THE VETERINARY BULLETIN

1943

IMPERIAL BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

Price 5/- net

Annual Subscription £2

Imperial Agricultural Bureaux.

EXECUTIVE COUNCIL

SHAMALDHARI LALL, C.I.E., I.C.S., Officiating High Commissioner, *Chairman*	India and Burma.
J. A. CALDER, C.M.G., *Vice-Chairman*	Colonies, Protectorates and Mandated Territories.
Sir DONALD FERGUSSON, K.C.B.	United Kingdom.
Lt.-Col. J. G. ROBERTSON	Canada.
F. L. McDOUGALL, C.M.G.	Australia.
F. J. DU TOIT	Union of S. Africa.
NEVILL L. WRIGHT, F.I.C., D.I.C.	New Zealand.
J. M. ADAMS, F.R.C.Sc.(I)	Eire.
D. JAMES DAVIES, C.B.E.	Newfoundland.
W. C. ROBERTSON	Southern Rhodesia.
Sir DAVID CHADWICK, K.C.M.G., C.S.I., C.I.E.	Secretary.

STAFF OF IMPERIAL BUREAU OF ANIMAL HEALTH, WEYBRIDGE

Director :

Professor T. DALLING, M.A., M.R.C.V.S.

Deputy Director and
Editor of The Veterinary Bulletin and of Index Veterinarius :

W. A. POOL, M.R.C.V.S.

Second Officer :

J. TWEEDALE EDWARDS, M.R.C.V.S.

Scientific Assistants :

RUTH ALLCROFT, B.Sc., PH.D.

ENID M. SMEDLEY, M.Sc.

Technical Assistants :

G. EIRA JONES, B.A.

MOYA RIMINTON.

CONTENTS

[Most subjects are referred to below. Readers are recommended, however, to look through all the abstracts for items of more restricted interest. Information on many diseases may be found in various sections, such as Immunity, Therapeutics, etc. See also key to the arrangement of abstracts given in the January, 1943 issue.]

DISEASES CAUSED BY BACTERIA AND FUNGI, 117-122.

Staphylococci, 117; Streptococci, 117; Anthrax, 117; Tuberculosis, 118; Johne's disease, 119; Swine erysipelas, 119; Pasteurellosis, 120; Salmonellosis, 120; Brucellosis, 120; Anaerobes, 121; Growth factors for bacteria, 122.

DISEASES CAUSED BY PROTOZOAN PARASITES, 122-123.

Trichomoniasis, 122; Avian malaria, 123; Piroplasmosis, 123.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA, 123-129.

Foot and mouth disease, 124; Swine pox, 124; Influenza, 124; Equine encephalomyelitis, 124; Bovine malignant catarrh, 127; Bovine encephalomyelitis, 127; Porcine encephalomyelitis, 128; Swine fever, 128; Dog distemper, 128; Virus diseases of birds, 129; Rickettsiasis, 129.

IMMUNITY, 129-130.

PARASITES IN RELATION TO DISEASE [ARTHROPODS], 130-131.

Lice, 130; Ticks, 130; Mange, 131.

PARASITES IN RELATION TO DISEASE [HELMINTHS], 131-133.

Trematodes, 131; Cestodes, 131; Nematodes, 132.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS], 133-134.

DISEASES, GENERAL, 134-136.

Laminitis in horses, 135; Periodic ophthalmia, 135; Hemoglobinuria of cattle, 135; Diseases of moose, 135; Colic of horses, 135; Calf pneumonia, 136; Muscle dystrophy in lambs, 136; Spondylitis in dogs and cats, 136; Porphyria, 136; Breeding diseases, 136.

NUTRITIONAL AND METABOLIC DISORDERS, 137-138.

PHYSIOLOGY AND ANATOMY, 138-140.

Digestion, 138; Respiration, 139; Reproduction, 139; Rigor mortis, 140.

POISONS AND POISONING, 140-141.

Minerals, 140; Cacao by-products, 140; Cottonseed, 141; Sweet clover, 141; Snake poisoning, 141.

THERAPEUTICS AND DISINFECTION, 141-145.

Sulphonamides, 141; Penicillin, 142; Treatment of bacterial diseases, 142; —— of protozoan diseases, 143; —— of ectoparasitism, 144; —— of endoparasitism, 144.

HYGIENE AND PUBLIC HEALTH, 145-146.

Milk, 145; Meat, 146.

TECHNIQUE AND APPARATUS, 146-147.

Bacteriology, 146.

REPORTS, 147-152.

Eire, 147; Great Britain, 148; U.S.A., 148; Switzerland, 152.

BOOK REVIEWS, 152.

ANON, 124, 128, 152.

Abbott, S. G., 148, *bis.*
Albrecht, B., 147.
Allen, R. W., Olivier, L., & Peterson, H. O., 144.
Allison, T. B. See Morris, M. L., et al., jt. authors, 136.
Amoroso, E. C. See Folley, S. J., et al., jt. authors, 139.
Anderson, A. K. See Thorp, W. T. S., et al., jt. authors, 143.
Anderson, R. J. See Lesuk, A., jt. author, 132.
Andrewes, C. H., 124.
Angevine, D. M., Cecil, R. L., & Rothbard, S., 117.
Apinis, P., 124.
Armstrong, W. H. See Coburn, D. R., et al., jt. authors, 120.
Ashburn, L. L. See Daft, F. S., et al., jt. authors, 141.
Asplin, F. D., 137.
Avery, J. L., 147.

Baligan, A., 133.
Baltazard, M. See Blanc, G., jt. author, 119.
Barcroft, J., 139.
Barke, A. See Völker, R., et al., jt. authors, 135.
Barkworth, H., & Davis, J. G., 146.
Bartel, H., 120.
Baumann, R., 128.
Beard, D., Taylor, A. R., Sharp, D. G., & Beard, J. W., 134.
Beard, J. W. See Beard, D., et al., jt. authors, 134.
—. See also Bryan, W. R., jt. author, 134.
Beck, A., 129.
Belding, D. L., & Merrill, B., 120.
Beltran, E., 123.
—, & Vargas, L., 123.
Bianchi, C., 119.
Bianchi, E., 129.
Blanc, G., & Baltazard, M., 119.
Blaxland, A. J., 140.
Blumenthal, H. T., 134.
—, & Loeb, L., 139.
Boivin, A., Delaunay, A., & Sarciron, R., 120.
—. See also Ramon, G., jt. author, 130.
Bongert, J. G., 140, *ter.*
Bornstein, S., 142.
Bourmer, 145.
Bova, F., 120.
Bratlie, O., 142.
Braude, R., & Foot, A. S., 140.
Brite, A., 135.
Brodie, J., 147.
Brooks, T. J., Jr., & Brown, H. W., 145.
Brown, E. See Fuller, R. H., et al., jt. authors, 134.
Brown, H. W. See Brooks, T. J., Jr., jt. author, 145.
Brüggemann, J., 137.
Bryan, W. R., & Beard, J. W., 134.
Budach, H. F., 134.
Burton, H., McLeod, J. W., Mayr-Harting, A., & Walker, N., 141.
Burton, I. W., & Emslie, J. W., 119.

Caballero y C, E., 131, *bis.*
Campbell, D. H. See Pauling, L., jt. author, 130.
Canić, R., 120.
Carmichael, J., 144.
de Carvalajal-Forero, J. See Martin, G. J., et al., jt. authors, 138.
Casals, J., 123.
Cassamagnaghi, A., 127.
Cèbe, J. See Galliard, H., jt. author, 123.
Cecil, R. L. See Angevine, D. M., et al., jt. authors, 117.
Chernyak, 126.
Clark, H. C., 141.
Clay, H. H., 152.
Coburn, D. R., Armstrong, W. H., & Wetmore, P. W., 120.
Costigan, S. M., 144.

Daft, F. S., Ashburn, L. L., Spicer, S. S., & Sebrell, W. H., 141.
Dalling, T., 118.
Davis, J. G. See Barkworth, H., jt. author, 146.
Decurtins, A., 127.
Delaunay, A. See Boivin, A., et al., jt. authors, 120.
Delves, E. See Youmans, G. P., jt. author, 117.
Diernhofer, K., & Haidl, J., 121.
Dougherty, R. W., 138.
Drechsler, C., 133.

Earl, W. B., 151.
Eden, A., 118.
Edwards, J. T., 118.
Eichhorn, A., 148.
Eichler, W., 130, *bis.*
Eire. Rep. agric. Dep., Univ. Coll. Dublin, 1940–41, 147.
—. Rep. on Dis. Anim. Acts, 1940–41, 147.
—. Rep. vet. Coll., 1940–41, 147.
—. Rep. vet. Res. Lab., 1940–41, 147.
Ellis, N. R. See McPhee, H. C., jt. author, 149.
Elvehjem, C. A. See Schaefer, A. E., et al., jt. authors, 137.
Emslie, J. W. See Burton, I. W., jt. author, 119.
Ernst, O., 146.
Espe, D., 152.

Fenstermacher, R., & Olsen, O. W., 135.
Filenski, L., 117.
Finch, R., 148.
Fladness, S. O., 149.
Fleischhauer, G., Gebauer, B., & v. Hayn, L., 145.
Folley, S. J., Watson, H. M. S., & Amoroso, E. C., 139.
Foot, A. S. See Braude, R., jt. author, 140.
French, M. H., 141.
Fuller, A. T., 142.
Fuller, R. H., Brown, E., & Mills, C. A., 134.
Fulton, J. D., & Yorke, Warrington, 143.

Galliard, H., & Cèbe, J., 123.
Gamaleya, 126.
Gebauer, B. See Fleischhauer, G., et al., jt. authors, 145.
Gell, P. G. H. See Knox, R., et al., jt. authors, 147.
Geneef, C., 131.
Gentili, G. B., 119.
Getting, V. A., 126.
Giltner, L. T. See Shahan, M. S., et al., jt. authors, 127.
Ginsburg, R. See Spellberg, M. A., et al., jt. authors, 137.
Giusti, L., & Sopeña, I., 138.
Glover, R. E., 118.
Gloyne, S. R., 118.
González, J. O., 132.
González, R. See Rosenbusch, F., jt. author, 123.
Gordon, I., 124.
Grabar, P., & Saub, A. M., 117.
Gratzl, E., 118, 135.
Grau, H., 127.
Great Britain. Municipal vet. Reps., 1939–41, 148.
Green, H. H., 118, *bis.*
Green, R. G., 123.
—. See also Page, W. G., jt. author, 128.
Gürtler, J., 131.

Haidl, J., 121.
—. See also Diernhofer, K., jt. author, 121.
Hamilton, C. C., 144.
Hamlin, M. See Scudi, J. V., jt. author, 137.
Hammon, W. McD., & Howitt, B. F., 127.
—. See also Reeves, W. C., et al., jt. authors, 127.
Hámori, D., 136.
Harbo, J. See Krebs, C., jt. author, 133.
Harrell, G. T. See Smith, S. G., et al., jt. authors, 138.
v. Hayn, L. See Fleischhauer, G., et al., jt. authors, 145.
Henkels, 135.
Heredia, S. E. See Rivas, J. G., jt. author, 145.
Herter, K., 130.
Hignett, S. L. See Stableforth, A. W., jt. author, 141.
Hinderer, G. See Seelemann, M., jt. author, 121.
Hoffmann, W., 137.
Horner, W. H., & White, W. J., 141.
Hoskins, W. M., 130.
Howitt, B. F., 127.
—. See also Hammon, W. McD., jt. author, 127.
Hughes, R. C., 132.

Ipolyi, E., 136.
Ivanov, 126.
Iwanoff, S., 140.
Izumi, E. M. See Reeves, W. C., et al., jt. authors, 127.

Jack, R. W., 130.
James, L. H. See Young, R. M., jt. author, 122.
Jármai, K., & Kemény, A., 133.
Jones, A. T., 145.
Jones, L. R. See Muir, R. D., et al., jt. authors, 142.
Jones, T. C., 135.
Joss, E. C., 149.

Karsten, 120.
Kayne, G. G., 118.
Keeton, R. W. See Spellberg, M. A., et al., jt. authors, 137.
Kemény, A. See Jármai, K., jt. author, 133.
Kernkamp, H. C. H., & Roepke, M. H., 128.
King, L. S., 126.
Kment, A., 139.
Knox, R., Gell, P. G. H., & Pollock, M. R., 147.
Knudson, R. L. See Shahan, M. S., et al., jt. authors, 127.
Kokurichev, 126.
Koller, R., 136.
Kolyakov, 126.
Kopeloff, L. M., & Stanton, A. H., 129.
—. See also Stanton, A. H., et al., jt. authors, 129.
Kopeloff, N. See Stanton, A. H., et al., jt. authors, 129.
Koser, S. A., & Wright, M. H., 121.
Kossovitch, N. See De La Rivière, R. D., jt. author, 130.
Kotlan, S., & Vajda, T., 147.
Kranich, & Nöcker, 144.
Krebs, C., & Harbo, J., 134.
Krüger, F., 133.
Kurchatov, V. I., 144.

Lachenschmid, M., 146.
Lamanna, C., 122.
Langenstein, H., 119.
Lebedev, N. A., 125.
Lenormant, C., 119.
Leonov, 125.
Lerena, C. A., 137.
Lesuk, A., & Anderson, R. J., 132.
Liegeois, F., 137.
Live, I. See Stubbs, E. L., jt. author, 121.
Loeb, L. See Blumenthal, H. T., jt. author 139.
Lomas, H., 144.
Lumsden, L. L., 129.
Lwoff, A., & Morel, M., 122.

McEwen, A. D., 121.
McHenry, E. W. See Patterson, J. M., jt. author, 138.
MacKellar, W. M., 149.
McKibbin, J. M. See Schaefer, A. E., et al., jt. authors, 137.
McLeod, J. W. See Burton, H., et al., jt. authors, 141.
MacNabb, A. L., 129.
McNutt, S. H. See Stearns, T. W., jt. author, 127.
McPhee, H. C., & Ellis, N. R., 149.
Makarov, P. M., 124.
Máriássy, B., 139.
Martin, G. J., Thompson, M. R., & de Carvalajal-Forero, J., 138.
Matthews, H. T., 118.
Mayr-Harting, A. See Burton, H., et al., jt. authors, 141.
Mazzotti, L., & Osorio, M. T., 133.
Merrill, B. See Belding, D. L., jt. author, 120.
Meunning, L. See Stanton, A. H., et al., jt. authors, 129.
Meyer, R., 146, *bis.*
Michael, V. See Richmond, J. J., et al., jt. authors, 117.
Milbradt, H. See Schönberg, F., jt. author, 140.
Miller, A. W., 149.

Mills, C. A. See Fuller, R. H., et al., jt. authors, 134.
Mitscherlich, E. See Wagener, K., jt. author, 129.
Mönnig, W., 139.
Mohler, J. R., 148.
Montgomerie, R. F., 118.
Morel, M. See Lwoff, A., jt. author, 122.
Morgan, I. M., Schlesinger, R. W., & Olitsky, P. K., 127.
Morris, M. L., Allison, T. B., & White, J. I., 136.
Mott, L. O. See Shahan, M. S., et al., jt. authors, 127.
Müller, H., 133.
Muir, R. D., Shamleffer, V. J., & Jones, L. R., 142.
Mura, D. See Pegreffi, G., jt. author, 121.
Murray, W. S., 134.
Mushett, C. W. See Unna, K., jt. author, 122.
Mutovin, V. I., 125.

Nardelli, L., 123.
Nassau, E., 119.
Nelson, R. C. See Warkany, J., jt. author, 137.
Newton, O. M., 119.
Nickel, 135.
Nöcker. See Kranich, jt. author, 144.
Nungester, W. J. See Wheeler, A. H., jt. author, 124.
Nyiredy, I., 117.

Oakley, C. L., 118.
Ochoa, A. G., 122.
Olitsky, P. K. See Morgan, I. M., et al., jt. authors, 127.
Olivier, L. See Allen, R. W., et al., jt. authors, 144.
Olsen, O. W. See Fenstermacher, R., jt. author, 135.
Oppermann, H. See Völker, R., et al., jt. authors, 135.
Osorio, M. T. See Mazzotti, L., jt. author, 133.
Osteen, O. L. See Shahan, M. S., et al., jt. authors, 127.
Otto, H., 136.

Page, W. G., & Green, R. G., 128.
Palazzo, R., & della Picca, P., 121.
Parish, H. J., 118.
Patterson, J. M., & McHenry, E. W., 138.
Pauling, L., & Campbell, D. H., 130.
Pavlov, 126.
Pavlov, P., 123.
Pegreffi, G., & Mura, D., 121.
Pentimalli, F., 133.
Peterson, H. O. See Allen, R. W., et al., jt. authors, 144.
della Picca, P. See Palazzo, R., jt. author, 121.
Pollock, M. R. See Knox, R., et al., jt. authors, 147.
Ponomarev, A. V., 125.
Posell, J. J., 120.
Prévot, A. R., & Taffanel, J., 121.

Quiroga, S. S., & Schang, P. J., 128.

Ramon, G., & Boivin, A., 130.
—, & Richou, R., 121.
Ray, J. D., & Whipple, G. E., 128.
Reed, C. I. See Richmond, J. J., et al., jt. authors, 117.
Rees-Mogg, G., 118.
Reeves, W. C., Hammon, W. McD., & Izumi, E. M., 127.
Reich, 132.
Reid, H. A., 118.
Reid, J., 118.
Reiser, R. See Smith, S. G., et al., jt. authors, 139.
Reshetnin, 143.
Richmond, J. J., Reed, C. I., Shaughnessy, H. J., & Michael, V., 117.
Richou, R. See Ramon, G., jt. author, 121.
Rivas, J. G., & Heredia, S. E., 145.
De La Rivière, R. D., & Kossovitch, N., 130.
Robinson, G. G., 131.
Roepke, M. H. See Kernkamp, H. C. H., jt. author, 128.
Rosenbusch, F., 119.
—, & González, R., 123.
Rothbard, S. See Angevine, D. M., et al., jt. authors, 117.
Rusetskiĭ, I. I., 125.

Sályi, J., 136.
Sanders, D. A., 136.
Sarciron, R. See Boivin, A., et al., jt. authors, 120.
Saub, A. M. See Grabar, P., jt. author, 117.
Savage, W., 146.
Schaefer, A. E., McKibbin, J. M., & Elvehjem, C. A., 137.
Schang, P. J. See Quiroga, S. S., jt. author, 128.
Sharp, D. G. See Beard, D., et al., jt. authors, 134.
Shaughnessy, H. J. See Richmond, J. J., et al., jt. authors, 117.
Schlesinger, R. W. See Morgan, I. M., et al., jt. authors, 127.
Schneider, M. D., 122.
Schönberg, F., 140.
—, & Milbradt, H., 140.
Schoening, H. W., 149.
Schoop, G., 120.
Schröder, G., 133.
Scudi, J. V., & Hamlin, M., 137.
Sebrell, W. H. See Daft, F. S., et al., jt. authors, 141.
Seelemann, M., & Hinderer, G., 121.
Serres, J. R., 145.
Shahan, M. S., Mott, L. O., Knudson, R. L., Osteen, O. L., & Giltner, L. T., 127.
Shamleffer, V. J. See Muir, R. D., et al., jt. authors, 142.
Shchepalov, 126.
Shigley, J. F. See Thorp, W. T. S., et al., jt. authors, 143.
Shmanenkov, N. A., 125.
Shokhor, N. I., 125.
Shumakovich, E. E., 132.
Sinev, 125.
Skidmore, D. I., 150.
Skryabin, 126.
Smadel, J. E., & Wall, M. J., 129.
Smetkin, M. F., 125.
Smirnov, 126.
Smith, M. I., 140.
Smith, S. G., Reiser, R., & Harrell, G. T., 138.
Smotrikov, 126.
Sopeña, I. See Giusti, L., jt. author, 138.
Spellberg, M. A., Keeton, R. W., & Ginsburg, R., 137.
Spicer, S. S. See Daft, F. S., et al., jt. authors, 141.
Spindler, L. A., 131.
Stableforth, A. W., & Hignett, S. L., 141.
Stanton, A. H., Meunning, L., Kopeloff, L. M., & Kopeloff, N., 129.
—. See also Kopeloff, L. M., jt. author, 129.
Stearns, T. W., & McNutt, S. H., 127.
Steele-Bodger, H. W., 118, *bis*.
Stubbs, E. L., & Live, I., 121.
Sure, B., 138.
Switzerland. Rev. infect. Dis., 1941, 152.

Taffanel, J. See Prévot, A. R., jt. author, 121.
Tarnaala, K., 131.
Taylor, A. R. See Beard, D., et al., jt. authors, 134.
Tehver, J., 140.
Tetley, J. H., 132.
Thompson, M. R. See Martin, G. J., et al., jt. authors, 138.
Thornton, H., 148.
Thorp, W. T. S., Shigley, J. F., & Anderson, A. K., 143.
Tinney, H. R., 118.
Tsuverkalov, 126.
TB. Control, Discussion on, 118.

Underbjerg, G. K. L., 137.
U.S.S.R. Discussion on Equine Encephalomyelitis, 124.
U.S.A., Nevada. Rep. Div. anim. Industr., 1940-42, 151.
—. Rep. Bureau anim. Industr., 1941, 148.
—. Reps, agric. Exp. Sta., 1938-41, 151.
Unna, K., & Mushett, C. W., 122.

Vaccari, I., 143, *bis*.
Vajda, T. See Kotlan, S., jt. author, 147.
Varela, G., & Zozaya, J., 120.
Vargas, L. See Beltran, E., jt. author, 123.
Vertinskiĭ, 126.
de Vine, B., 148, *bis*.
Völker, 135.
Völker, R., Barke, A., & Oppermann, H., 135.
Vyshelesskiĭ, 126.

Wagener, K., & Mitscherlich, E., 129.
Walker, N. See Burton, H., et al., jt. authors, 141.
Wall, M. J. See Smadel, J. E., jt. author, 129.
Warkany, J., & Nelson, R. C., 137.
Watson, C., 118.
Watson, H. M. S. See Folley, S. J., et al., jt. authors, 139.
Westhues, M., 140.
Wetmore, P. W. See Coburn, D. R., et al., jt. authors, 120.
Wetzel, R., 132.
Wheeler, A. H., & Nungester, W. J., 124.
Whipple, G. E. See Ray, J. D., jt. author, 128.
White, J. I. See Morris, M. L., et al., jt. authors, 136.
White, W. J. See Horner, W. H., jt. author, 141.
Wight, A. E., 149.
Willems, R., 122.
Wipf, L. See Wisnicky, W., jt. author, 128.
Wirth, D., 144.
Wisnicky, W., & Wipf, L., 128.
Wright, M. H. See Koser, S. A., jt. author, 121.

Yampol'shiĭ, Y., 124.
Yorke, Warrington. See Fulton, J. D., jt. author, 143.
Youmans, G. P., & Delves, E., 117.
Young, R. M., & James, L. H., 122.

Zemskov, M. V., 123.
Zozaya, J. See Varela, G., jt. author, 120.
Zumpt, F., 131.
Zwicky, H., 118.

REVIEW ARTICLES

(1) " **Antibacterial Agents derived from Micro-Organisms.**"

(2) " **The Present Position of Phenothiazine as an Anthelmintic.**"

Reprints (price 1/– and 1/6 respectively) obtainable from: Central Sales Branch (Imperial Agricultural Bureaux), Agricultural Research Building, Penglais, Aberystwyth.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

Bulletins on disease subjects written for farmers and " popular " articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature, are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

NOTE.—In certain cases it is not possible to check references in the original publication. Such references are marked with an asterisk.

IMPERIAL BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 13.] April, 1943. [No. 4.

DISEASES CAUSED BY BACTERIA AND FUNGI

YOUMANS, G. P., & DELVES, E. (1942). **The Effect of Inorganic Salts on the Production of Small Colony Variants by Staphylococcus aureus.**—*J. Bact.* **44.** 127–136. 776†

Small colony variants (G forms) have been reported for a number of bacterial species, but their biological significance has been interpreted differently by different investigators. On the one hand they are assigned a position in the life-cycle of the organisms, while on the other they are merely represented as forms possessing a temporarily lowered metabolic rate.

The morphological and cultural characteristics of these variants were studied, as produced by 17 strains of *Staph. aureus* following the addition of varying concentrations of different inorganic salts to the growth medium. The order of effectiveness of these salts in eliciting small colony variants and inhibiting growth was as follows :– $BaCl_2$, $BaNO_2$, $BaNO_3$, $CaCl_2$, LiCl, $MgCl_2$. The method of reversion to the ordinary colony type was also investigated.

Their results lead the authors to conclude that these G forms do not occupy a position in the life-cycle of the organisms, but merely represent variants possessing a temporarily lowered metabolic rate due to the temporary loss or inactivity of certain enzymatic functions.—J. LOCHIEL MCGIRR.

RICHMOND, J. J., REED, C. I., SHAUGHNESSY, H. J., & MICHAEL, V. (1942). **The Effect of Staphylococcus Enterotoxin on Isolated Rabbit Gut Segments.**—*J. Bact.* **44.** 201–205. 777

Experiments were made with segments of rabbit jejunum to investigate the influence of staphylococcal enterotoxin on the gut *in vitro*, and to show that the toxin need not be absorbed by the mucosa to produce its effect. 108 segments of guts were used and half of these were tied at both ends to cover the mucosa. The pieces of gut were placed in a bath containing the various experimental or control fluids. Enterotoxin was prepared from strains of staphylococci which had produced food poisoning. Extracts from air-borne staphylococci were used as controls. Increased activity, shown by increased toxicity and amplitude, occurred in 72% of the cases with the mucosa exposed, and in 77% of cases in which the mucosa was not exposed. Control fluids caused no change of activity in 60%, decreased activity in 22%, and increased activity in 17% of cases. The authors suggest the possibility of utilizing this technique to assess the power of various strains of staphylococci to produce toxin.—B. WEITZ.

ANGEVINE, D. M., CECIL, R. L., & ROTHBARD, S. (1942). **Influence of Various Types of Immunization on the Genesis of Experimental Hemolytic Streptococcus Arthritis.**—*Arch. Path.* **34.** 18–30. 778

Experiments were made to determine the effect of general immunization and sensitization and to study the effect of intra-articular sensitization on the development of streptococcal arthritis in rabbits. The incidence was studied of arthritis produced by the intravenous injection of living haemolytic streptococcal cultures in normal and in intravenously or intracutaneously immunized rabbits. A formolized vaccine was used for the immunization of the rabbits. The experiment showed that arthritis was produced easily in rabbits previously immunized by the intravenous route, but seldom in the case of those animals immunized intracutaneously or in normal rabbits. Intracuticular sensitization by the injection in one carpal joint of heat-killed haemolytic streptococcus culture or streptococcal nucleoprotein was followed by the intravenous injection of haemolytic streptococci to determine the effect of localization in the sensitized joint. It was found that arthritis developed more readily in the sensitized joint and was more definite than in other joints. The inflammatory process was of a more chronic nature than that usually observed in non-sensitized animals.—B. W.

NYIREDY, I. (1941). Ultravirusos eredetu-e a tehenek fertőző hurutos tőgygyulladása ? [**Is Bovine Infectious Catarrhal Mastitis Caused by a Virus ?**]—*Állatorv. Lapok.* **64.** 75–76. 779

Intramammary injections of sterile filtrates of milk taken from cows infected with *Streptococcus agalactiae* failed to set up mastitis in healthy cows. The findings of BROADHURST *et al.* [*V. B.* **10.** 516.] could not be confirmed.—J. CSONKA.

FILENSKI, L. (1940). El reconocimiento del carbunclo bacteridiano en la práctica. [**Diagnosis of Anthrax**].—*J. agron. vet., Univ. B. Aires, 1939.* pp. 451–464. 780

F. discusses the subject, describes a number of cases, and discusses diagnosis.—MILLER WATSON.

GRABAR, P., & SAUB, A. M. (1942). Fractionnement du sérum anticharbonneux de cheval. [**Fractionation of Horse Anti-Anthrax Serum**].—*Ann. Inst. Pasteur.* **68.** 355–360. 781

A fraction containing antibodies which had no protective action, but which precipitated the capsular and polysaccharide haptens, was obtained from horse

† Abstracts will be numbered serially throughout volume **13** of the *Veterinary Bulletin*, the numbers being printed in black type at the end of each title. These numbers will be used in giving cross references to abstracts which might equally well appear in more than one section of the journal.

anti-anthrax serum. Protective antibodies, free from precipitins but containing some antiprotease, were obtained in the pseudoglobulin fraction of the serum. The ability of the serum or of its fractions to interfere with the action of gelatinase in liquefying gelatin is used to measure its antagonistic action. The authors show that the therapeutic activity of the serum is not related to its antagonistic action on gelatinase, and that the action of the latter on *Bacillus anthracis* is not specific.—J. P. GARDNER.

I. —. (1942). **Discussion on the Control of Diseases of Cattle Inimical to Man. Tuberculosis.** [Speakers : DALLING, T., GLOYNE, S. R., GLOVER, R. E., KAYNE, G. G., STEELE-BODGER, H. W., REES-MOGG, G., GREEN, H. H., EDEN, A., REID, J., OAKLEY, C. L., TINNEY, H. R., & WATSON, C.].—*Proc. R. Soc. Med.* **35.** 469–478. **782**

II. —. (1942). **Discussion on the Control of Tuberculosis in Cattle—(1) by Immunization ; (2) by Eradication of Infected Animals.** [Speakers : MATTHEWS, H. T., MONTGOMERIE, R. F., GREEN, H. H., PARISH, H. J., STEELE-BODGER, H. W., REID, H. A., & EDWARDS, J. T.].—*Ibid.* 478-482. **783**

I. DALLING outlined the action of tuberculin and improvements which have taken place in its manufacture. He stated that experimental results were sufficiently encouraging to merit an extensive field trial with BCG vaccine and, although a good deal of experimental work was necessary, the vole organism might be found to be of considerable value in the control of bovine TB.

GLOVER suggested a combination of eradication by tuberculin testing and vaccination with BCG.

STEELE-BODGER did not think the conditions prevailing in the U.S.A. were comparable with those in this country. There were too many heavily infected areas in this country to allow re-stocking from free areas and he urged that methods of immunization should be more fully investigated. Over a period of ten years he had used BCG vaccine on some 33 herds and he was satisfied that it conferred a high degree of resistance.

Routine clinical examination of dairy herds was of great value. In the county of Staffordshire, regular bacteriological examination of milk from herds subjected to quarterly clinical examinations showed an incidence of tubercle bacilli in the milk of 0·5% compared with 5% in herds not so examined.

TINNEY dealt with the incidence of TB. in Australia.

J. REID described work he had done with P.P.D. and the Mantoux intradermal test in g. pigs. It was possible to assess the degree of relationship, in specificity, between the various P.P.D.'s of members of the acid-fast group.

GREEN and EDEN dealt with the manufacture and standardization of synthetic medium tuberculin.

ROODHOUSE GLOYNE mentioned the difficulties in differentiating between human and bovine infection in man and gave statistics of the incidence of bovine TB. in human beings in England and Scotland, in practically all instances the figures for Scotland being the higher. There was evidence to suggest that the incidence of bovine type infections varied in different parts of Scotland. They were higher in the north of England than in the south.

The proportion of infected milk samples had decreased during the last few years but there was a disturbing increase since the outbreak of the present war. He thought that clinical examination of cows did not alone result in a significant reduction in the percentage of infected milk samples. The safeguards offered by pasteurization depended entirely upon the efficiency of the methods employed. He gave examples of infection found in pasteurized milk and was convinced that if pasteurization were to be generally adopted in this country the following safeguards would be necessary :– it would have to be carried out in well organized central depots by experienced persons, in plants which had been tested and passed ; regular inspection for the detection of engineering defects would be necessary as well as bacteriological control. Although pasteurization is valuable in reducing the amount of infection it cannot be regarded as the solution of the problem.

He advocated an improved bacteriological service which he considered would be a paying proposition from all points of view.

KAYNE advocated pasteurization of all milk and suggested propaganda urging this.

II. MATTHEWS briefly traced the attempts to eradicate TB. in cattle and argued that methods followed in America were not applicable in this country. He suggested that three distinct methods of control might be applied simultaneously in this country :– (1) in districts where the incidence is low, eradication on the American lines by extension of the attested herds scheme ; (2) in districts with medium incidence, calf nurseries for replacing whole herds with calves reared free from disease ; and (3) where the incidence is high, the use of vaccines in an attempt to reduce the number of infective cases.

The problem of disposal of reactors would be met by permitting free sale out of eradication areas into those areas where reduction, not elimination, of the disease was the immediate aim, but not *vice versa*.

MONTGOMERIE did not consider the slaughter policy, based on the tuberculin test, to be practicable in this country under present conditions and considered the correct policy to be segregation of infected animals. He doubted very much whether progress would be made by vaccination under present conditions.

H. A. REID said that his attempts some years ago in New Zealand to supply milk free from tubercle bacilli, under modern hygienic conditions, had not been encouraging and had resulted in financial loss.

J. T. EDWARDS briefly dealt with efforts to vaccinate cattle against TB. and concluded that vaccination must be adopted only in animals free from natural infection. In heavily infected herds, this would mean vaccination only on newly born calves. A period must elapse after vaccination before the calves are allowed to become exposed to natural infection. Vaccination must be repeated at intervals of not more than about nine months. Vaccinated animals must be excluded throughout their lives from the risk of massive infection. Field trials are necessary before vaccination can be adopted as a general measure.—H. E. BYWATER.

ZWICKY, H. (1942). Die Bekämpfung der Rindertuberkulose auf breiterer Basis. [**Bovine TB. Control on a Wider Basis**].—*Schweiz. Arch. Tierheilk.* **84.** 211–223. **784**

In 1940, Z. was requested by the Federal authorities to draw up a plan for the control of bovine TB. in Switzerland. This he did after visiting Scandinavian countries. He prepared an " action plan " which was discussed by a committee of persons representing livestock and veterinary interests. In this article the committee's opinions on the 12 points of the plan are commented upon by Z., who thereby clarifies to some extent the various aspects of the problem as it affects the animal husbandry conditions peculiar to Switzerland. The original should be read for the details. [New plans for State control were published at the beginning of 1942 [see *V. B.* **12.** 485.] and presumably conform closely to Z.'s recommendations : the detailed State plan has not been seen.]—J. E.

GRATZL, E. (1942). Drei klinisch seltenere Fälle von

Tuberkulose. **[Three Rare Cases of TB.]**—*Tierärztl. Rdsch.* **48.** 236–240. **785**

Case records of TB. in a dog, a bull, and a horse.
—E. COTCHIN.

NEWTON, O. M. (1938). Contribución al estudio del método intradermo doble para el diagnóstico de la tuberculosis bovina. **[Studies on the Double Intradermal Tuberculin Test]**.—*J. agron. vet., Univ. B. Aires, 1937.* pp. 211–221. **786**

N. discussed the various methods of tuberculin testing and reported on his own work.

Thirty tuberculous cows were tested, first by the single intradermal test, when 26 gave positive reactions, and secondly by the double intradermal test when 29 reacted.

He also compared the double intradermal test with the ophthalmic test and found the former much more accurate.

Fifteen cows which had reacted to the subcutaneous test a year previously were submitted to the double intradermal test. Two did not react but when tested with the subcutaneous test five days later, gave positive reactions. N. records, however, that he has had cases which did not react to the subcutaneous test and which reacted to the double intradermal test.

He recommends the use of more than one method used simultaneously to obtain greater accuracy in diagnosis.—MILLER WATSON.

*BIANCHI, C. (1940). Contributo allo studio della deviazione del complemento nella diagnosi della tubercolosi bovina. **[Complement-Fixation Test in Diagnosis of Bovine TB.]**—*Profilassi.* **13.** 162–169. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 595]. **787**

In newly born calves immunized with BCG vaccine, the immune bodies can be detected in the blood by the c.-f. test 10–20 days after the second inoculation; the titre increases and is still high three months later. In cows, repeatedly vaccinated with BCG, a positive titre occurs over a period of several years.—A. MOLDAWSKY.

*GENTILI, G. B. (1940). Il comportamento dei caratteri morfologici e biologici dei ceppi del B.K. tipo bovino coltivati comparativamente su terreni alla cera e alla glicerina. **[Morphology and Biology of Strains of Bovine Type Tubercle Bacilli Grown on Wax and Glycerin Media]**.—*Boll. Ist. sieroter. Milano.* **19.** 620–638. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 146]. **788**

After monthly subculture on wax and glycerin media over a period of 20 months, there were marked changes in the properties of a strain of tubercle bacilli (bovine type). As compared with cultivation on Petragnani's medium the cultures on the wax medium showed a marked decrease in virulence, a definite tendency towards the formation of R colonies, and a loss of the characteristic properties of the strain. [Composition of the wax medium and other details not included in the German abstract.]—J. LOCHIEL MCGIRR.

NASSAU, E. (1942). **The Effect of Blood Charcoal on the Growth of the Tubercle Bacillus.**—*J. Path. Bact.* **54.** 443–447. **789**

The addition of 1% of blood charcoal to both solid and liquid media (the former a slight modification of Petragnani's medium, and the latter Kirchner's synthetic medium with the addition of an equal volume of pig serum to allow of growth in the depths of the liquid) was found to increase the growth rate of human type tubercle bacilli. Moreover, the colonies produced were more numerous. In relation to routine work, as instanced by 4,000 cultural examinations over the course of a year, the net effect of the charcoal was that the results of diagnostic culture work were suitable for report after 20 days' incubation, whereas, in the absence of charcoal, at least 25 days were required.

No explanation of the growth-promoting action of the charcoal was indicated by the experimental work, but N. suggests that it may play some part in absorbing acid introduced by the inocula (from sputum, pus, laryngeal swabs, etc.) which, according to his routine practice, were pre-treated with 10% sulphuric acid.
—J. LOCHIEL MCGIRR.

ROSENBUSCH, F. (1938). La paratuberculosis de los bovinos en la Argentina. **[Johne's Disease in Argentina]**.—*J. agron. vet., Univ. B. Aires, 1937.* pp. 15–18. **790**

A general discussion on Johne's disease, which has been diagnosed in Argentina. R. asks meat inspectors to report cases so that some idea of the distribution of the disease in Argentina may be obtained.—M. WATSON.

BLANC, G., & BALTAZARD, M. (1942). Transmission de l'infection à bacille de Whitmore par insectes piqueurs. I. Maladie expérimentale du cobaye. **[Transmission of *Pfeifferella whitmori* by Biting Insects. I. Experiments on G. Pigs]**.—*Ann. Inst. Pasteur.* **68.** 281–293. **791**

The authors were able regularly to transmit melioidosis among g. pigs by means of fleas (*Xenopsylla cheopis*) and mosquitoes (*Aëdes aegypti*), either by placing the animals in boxes containing hundreds of infected insects or by allowing repeated infection in individual animals by small numbers of the insects in tubes which were applied to the depilated skin for certain periods.

In all cases, the transmitted infection was fatal, taking the course of abscess formation at the infection site followed by lymphadenitis (lesions shown in several photographs). P.M. findings are described.—J. E.

*LANGENSTEIN, H. (1941). Untersuchungen über die Verbreitung der Rotlaufbakterien im Tierkörper bei Backsteinblattern und Herzklappenrotlauf der Schweine. **[Spread of Bacilli of Swine Erysipelas in the Body of Affected Pigs with Skin Lesions and Endocarditis]**.—*Inaug. Diss., Berlin.* pp. 32. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 355]. **792**

L. found that in 67% of 33 cases of cutaneous ("diamond" skin lesions) and in 34% of 70 cases of swine erysipelas with cardiac lesions (verrucose endocarditis), the causal organisms were present in septicaemic distribution in the body and were localized to the lesions in the remainder. In generalized cases the distribution in the body organs is very variable, so that no rules can be formulated concerning the mechanism of infection in generalized and localized S.E.

For meat inspection work each case must be examined bacteriologically to ascertain whether infection is general or localized, in order to decide the action to be taken, according to German regulations, with regard to the meat.

BURTON, I. W., & EMSLIE, J. W. (1942). **Infection of the Bovine Udder by Pasteurella septica.**—*Vet. Rec.* **54.** 387. **793**

One of six cows which had been in transit for three days became ill, showing swelling of one quarter of the udder. From this quarter, a straw-coloured secretion was obtained from which typical *Past. septica* organisms were isolated in pure culture. Physical characters of the secretion and details of the bacteriological examination of the organism are given.
—M. H. KYAW.

*LENORMANT, C. (1941). Les pasteurelloses humains par morsures de chats. **[Human Pasteurellosis from Cat Bites]**.—*Pr. méd.* II. pp. 946–948. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 600]. **794**

Several cases are described of pasteurella infection in human beings caused by cat bites, which in some were of an insidious character. No deaths were observed. Pasteurella were detected in healthy organs of all cats which had transmitted pasteurellosis by bites. Cats, although regarded as not very susceptible to pasteurella infection, act as carriers. According to L., 90% of normal cats harbour pasteurella in their organs.

Of the 307 cases reviewed of bite injuries of all types in man, 240 were inflicted by dogs, 25 by human beings, 23 by cats, 7 by horses, and the remainder by apes and other animals. The malignancy of the injuries depends on localization, the species of the biter, and the type of bacteria inoculated. Injuries inflicted by human beings and cats are regarded as the most serious, the former being mainly responsible for transmission of spirochaetes and fusiform bacilli and the latter for certain pasteurella infections.—A. Moldawsky.

Belding, D. L., & Merrill, B. (1941). **Tularemia in Imported Rabbits in Massachusetts.**—*New Engl. J. Med.* **224.** 1085–1087. **795**

Since 1937, 24,689 live rabbits have been imported into Massachusetts, under a general guarantee of freedom from infectious diseases, and liberated by game clubs. 330 of these animals were examined P.M. and tularaemia was detected in two (0·6%). The danger is stressed of the spread of this disease in Massachusetts, particularly in the tick-infested counties, and legislation prohibiting the importation of rabbits is urged.

Varela, G., & Zozaya, J. (1941). Salmonelas en ganglios de porcinos. **[Salmonella Isolated from Lymph Nodes of Swine].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 311–318. [English summary]. **796**

Mesenteric lymph nodes were obtained from apparently normal swine at slaughter and were examined culturally and serologically for salmonella.

Seventy-four grouped samples from 209 pigs were examined. *S. anatum* was isolated from six, both *S. cholerae-suis* and *S. typhi-murium* from two, and *S. cholerae-suis* var. kunzendorf, *S. derby*, *S. heidelberg*, *S. senftenberg*, and *S. meleagridis* from one sample each. —J. E.

Posell, J. J. (1942). **Intestinal Cultures for Detecting Salmonellosis in Young Turkeys.**—*Amer. J. vet. Res.* **3.** 257–259. **797**

Comparison of the results of the examination of 366 turkey poults by the routine North American cultural method for pullorum disease diagnosis and by culture of intestinal contents showed that although the latter method gave no advantage in detecting pullorum disease, in one-third of the batches it demonstrated paratyphoid infection unrevealed by the former method. It is recommended, therefore, that intestinal cultures should be included in all routine examinations of young turkeys. —D. D. Ogilvie.

Coburn, D. R., Armstrong, W. H., & Wetmore, P. W. (1942). **Observations on Bacterin Treatment of Salmonella Typi-Murium Infections in Chinchillas.**—*Amer. J. vet. Res.* **3.** 96–99. **798**

This is an account of a paratyphoid outbreak on a chinchilla ranch, due to infection of the herd with *S. typhi-murium*. Peracute, acute, and chronic cases occurred, and the mortality rate was comparatively high. The whole herd was immunized by three injections at five-day intervals of an autogenous vaccine, containing 200 millions of bacteria per ml. One dose of 0·5 ml. and two doses of 1 ml. were administered. The response to vaccination was good.

Immunization of the dam and sire, early in the period of pregnancy, enhanced the production of living litters and the survival of the young. Repeated culture tests failed to reveal the presence of carrier animals. —Isobel W. Burton.

*Canić, R. (1940). [*Salmonella typhi-murium* **in Rabbits and G. Pigs**].—*Vet. Arhiv.* **10.** 634–643. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 373]. **799**

Report of an investigation on a disease in a stock of rabbits, which was found to be *Salmonella typhi-murium* infection. Two culturally and serologically distinct forms were observed, but both caused the same disease in g. pigs, this being described as resembling that reported " in the literature ".

Bartel, H. (1941). Zur Frage der reinen Salmonella-O-Seren. **[The Question of Pure Salmonella O Sera].** —*Tierärztl. Rdsch.* **47.** 467–470. **800**

B. describes the use of agglutinating sera, containing pure O antibodies only, in separating the salmonella commonly found at routine meat inspection into four groups, for a preliminary rapid diagnosis prior to a detailed study of the antigenic structure. The sera are labelled B, C, D, and S, and contain antibodies to the following antigens respectively :– IV, V . . . ; VI, VIII . . . ; IX ; III, X ; examples show how the sera are used.—E. Cotchin.

*Boivin, A., Delaunay, A., & Sarciron, R. (1940). Sur la libération de l'antigène glucido lipidique par les cellules mortes des bactéries à Gram-négatif et plus spécialement des "Salmonella". **[Liberation of Glycolipoid Antigen from Dead Gram-Negative Bacteria, especially Salmonella].**—*C. R. Soc. Biol. Paris.* **134.** 357. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 106]. **801**

When such Gram-negative bacteria are killed by, for example, heating to 56° C., the antigen is liberated from the surface of the bacteria, where it exists as a thin layer, probably monomolecular. Vaccines prepared by such methods are to be regarded as a suspension of bacterial cells in a very dilute solution of antigen. —J. G. Carr.

Schoop, G. (1942). Die Bruzellose der Rinder im Wartheland. **[Bovine Brucellosis in Wartheland].**—*Dtsch. tierärztl. Wschr.* **50.** 323–325. **802**

The incidence of brucellosis in cattle in the district of Posen has risen rather alarmingly since the invasion of Poland. When Germany invaded the country, many cattle were driven eastwards, in an attempt to save them, but later many of these cattle were taken back again. Further movements of cattle into the district, which were to form the nucleus of a projected increased breeding industry contributed to the spread of the disease, and its attendant troubles—loss of milk, sterility, etc. Measures to check the disease are urged.—E. C.

*Bova, F. (1941). **[Brucellosis in Cattle Slaughtered at Messina Abattoir].**—*Clin. vet., Milano.* **64.** 292–298. [Abst. from abst. in *Wien. tierärztl. Mschr.* **29.** 235]. **803**

Tests for brucellosis during 1938–39 gave the following results :– 21 positive and nine doubtful among 704 cows ; six doubtful among 144 oxen ; two doubtful among 66 bulls, and four doubtful among 940 calves. —J. G. Carr.

Karsten. (1940). Die Bekämpfung des seuchenhaften Verkalbens. **[Control of Bovine Brucellosis].**—*Dtsch. tierärztl. Wschr.* **48.** 555–558. **804**

A general article. The widespread practice of using common grazing grounds has encouraged the spread of the disease and made its control difficult. The use of a live vaccine was forbidden in Germany in 1935 [see Seelemann—*V. B.* **13.** 67.], and a system of control by blood testing and segregation was employed to some extent. K. claims that this method has given

very satisfactory results, although it has been handicapped by the absence of financial support to cover compensation for slaughter. Nevertheless, there are in Saxony alone 1,937 *Br. abortus* free herds.

K.'s experience has led him to regard all bulls which react to the agglutination test as dangerous and their use should be avoided in herds which are being freed from the disease.—N. S. BARRON.

I. HAIDL, J. (1941). Vergleichende Untersuchungen über die Meinicke-Flockungsprobe und ihr Verhältnis zur Agglutination bei der Brucellose des Rindes. **[Comparison of Meinicke's Flocculation and the Agglutination Test for Bovine Brucellosis].**—*Wien. tierärztl. Mschr.* **28.** 384. [Abst. only given]. **805**

II. DIERNHOFER, K., & HAIDL, J. (1942). Methodische Untersuchungen über die Meinicke-Flockungsprobe und ihr Verhältnis zur Agglutination bei der Bruzellose des Rindes. **[Studies on Meinicke's Flocculation Test and Its Relationship to the Agglutination Test in Bovine Brucellosis].**—*Z. InfektKr. Haustiere.* **58.** 171–198. **806**

I. H. concludes that the Meinicke test is not more accurate than the aggln. test and that if reagents are used in wrong proportions the Meinicke test may give rise to more apparent positive reactors than the aggln. test.

II. Numerous bovine sera were tested by both the aggln. and the Meinicke flocculation tests. It was found that the proportions in which reagents were used had a very close bearing on the result of the flocculation test. A higher proportion of positives was obtained by the Meinicke than by the aggln. test. This was attributed to the presence of nonspecific substances in the sera. It was concluded that the Meinicke flocculation test is in no way superior to the aggln. test for serological diagnosis of bovine brucellosis.—R. S. DE ROPP.

MCEWEN, A. D. (1942). **The Use of Br. abortus Vaccine.**—*Vet. Rec.* **54.** 487–489. **807**

The importance is emphasized of well regulated field tests in assessing the immunological value of *Br. abortus* vaccines. Diagrammatic representations are given of the probable influence on the course of the disease of the size of the infective dose and of whether infection is contracted before or after service. The probable duration of immunity conferred by a non-virulent vaccine is also represented. It is suggested that a single vaccination with a non-virulent vaccine will probably not confer an enduring immunity. Vaccines of different degrees of virulence might be used, the more virulent vaccine being administered after the less virulent one. With reference to strain 19, it is pointed out that there is nothing to show that the virulence of this strain has not deteriorated with time. —R. S. DE ROPP.

*PEGREFFI, G., & MURA, D. (1941). **[Vaccination against Brucellosis in Sheep and Goats].**—*Clin. vet., Milano.* **64.** 347–350. [Abst. from abst. in *Wien. tierärztl. Mschr.* **29.** 235]. **808**

Inoculation of avirulent brucella in liquid paraffin and lanolin produced a strong, lasting immunity in sheep and goats, as shown by serological and infection tests. This was not the case when the avirulent bacteria were incorporated in peanut oil, alone or with lanolin, or adsorbed on alumina. Virulent bacteria adsorbed on alumina caused the death of g. pigs in 6–7 months. —J. G. CARR.

KOSER, S. A., & WRIGHT, M. H. (1942). **Further Experiments on Accessory Growth Factor Requirements of the Brucella Group.**—*J. infect. Dis.* **71.** 86–88. **809**

The effect was studied of biotin and biotin methyl ester on the growth of two strains of *Br. abortus* in synthetic medium. Both biotin and its ester promoted growth; 0·0001 μg. of biotin per ml. of medium produced about 90% maximum growth, and 0·000003 μg. per ml. would support light growth. No growth was obtained in the absence of biotin or its methyl ester. Nicotinamide, thiamine and pantothenic acid were also required for growth of *Br. abortus*. The pyrimidine, but not the thiazole, component of thiamine was required.—R. S. DE ROPP.

SEELEMANN, M., & HINDERER, G. (1942). Vorteile und Nachteile bei der Anwendung des Viktoriablauagars zur Züchtung von Abortus-Bangbakterien. **[Advantages and Disadvantages of Victoria Blue Agar for *Br. abortus* Culture].**—*Z. Fleisch- u. Milchhyg.* **52.** 257–258. **810**

A comparison of the growth of *Br. abortus* on Stafseth's agar, Stafseth's agar + 1 : 20,000 Victoria blue, Stafseth's agar + 5% blood, and broth agar + 5% blood indicated that the addition of the dye in this concentration markedly reduced and often inhibited the growth of *Br. abortus*. A significant increase in the amount of growth was obtained by the addition of blood to the nutrient agar.—R. S. DE ROPP.

STUBBS, E. L., & LIVE, I. (1942). **Studies on the Allergic and Antigenic Activity of Sonic Filtrate of Brucella Abortus.**—*Amer. J. vet. Res.* **3.** 146–153. **811**

A filtrate prepared from a sonically disintegrated suspension of *Br. abortus* evoked skin reactions in rabbits and g. pigs sensitized by inoculations of living suspensions of *Br. abortus*. One intracutaneous dose of sonic filtrate did not sensitize the animals to subsequent skin tests but did stimulate production of agglutinins.—R. S. DE ROPP.

*PALAZZO, R., & DELLA PICCA, P. (1940). La existencia de una enfermedad a " Streptobacillus moniliformis " en las lauchas albinas. **[*S. moniliformis* (*Asterococcus muris*) Infection in White Mice].**—*Rev. sud-amer. Endocrin.* **23.** 139–148. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 248]. **812**

Symptoms observed in naturally infected white mice included polyarthritis, oedema of the extremities, submaxillary abscesses, and conjunctivitis. Paralysis sometimes preceded death. *S. moniliformis*, was found to be responsible for the condition.—B. WEITZ.

PRÉVOT, A. R., & TAFFANEL, J. (1942). Recherches biochimiques sur *Cl. histolyticum* et l'influence de la vitamine C sur son métabolisme. **[Biochemical Research on *Clostridium histolyticum* and Influence of Vitamin C on its Metabolism].**—*Ann. Inst. Pasteur.* **68.** 363–365. **813**

Haemolysin was quickly produced in glucose broth by strain 114 C of *Cl. histolyticum*, while another strain (" horse ") only produced a small quantity of haemolysin after some time. Both strains produced acetic, butyric, and lactic acids, and ammonia, and utilized glucose in glucose broth. The addition of vitamin C to the broth increased the rate of glucose utilization, the rate of production of volatile acids, and the ratio between 4 carbon atom and 2 carbon atom products. Vitamin C seems to act by inhibiting the action of air on fermentation.—J. P. GARDNER.

*RAMON, G., & RICHOU, R. (1941). Solution d'antitoxine tétanique et prophylaxie des accidents sériques dans la prévention du tétanos. Recherches expérimentales et résultats cliniques. **[Soluble Tetanus Antitoxin and the Prevention of Serotherapy Troubles. Experimental and Field Results].**—*Rev. Immunol.* **6.**

209–223. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 356]. **814**

A new, improved tetanus antitoxin is described. It is produced in horses which are hyperimmunized with tapioca anatoxin and is very potent, containing up to 12,000 antitoxin units per ml. The serum is concentrated and contains very little protein. It keeps very well and persists for a long time in the body after injection. It has no tendency to cause anaphylaxis after repeated dosage.

*Willems, R. (1942). Le botulisme du cheval en Belgique. **[Botulism in Horses in Belgium].**—*Ann. Méd. vét.* p. 33. [Abst. from abst. in *Skand. Vet-Tidskr.* **32.** 566 and 573–575]. **815**

A conventional clinical account of botulism on a Belgian farm where seven horses died. The exact source of infection was not discovered.

Ochoa, A. G. (1941). El *Microsporum canis* (Bodin y Almy, 1879) en México. **[*Microsporon canis* in Mexico].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 319–326. [English summary]. **816**

All of 13 cases of ringworm of the scalp among 135 suspected cases in human beings were proved to be associated with *M. canis*. Cultural characters are described and illustrated.—J. E.

Young, R. M., & James, L. H. (1942). **Action of Intestinal Microörganisms on Ascorbic Acid.**—*J. Bact.* **44.** 75–84. **817**

Experiments were carried out with several pure strains of the genera *Proteus*, *Alcaligenes* and *Escherichia*. The medium used was nutrient broth, with ascorbic acid added to give a final concentration of 0·35–0·45 mg. per ml. When desirable, 1% glucose or lactose was added to this medium.

Initial experiments showed that under aerobic conditions three strains of *Escherichia* [*Bacterium*] *coli* decomposed all the ascorbic acid in the medium within 14–22 hours at 37°C. On the other hand, four strains of *Proteus* and two strains of *Alcaligenes* organisms did not completely destroy all the vitamin C after 192 hours' incubation, indicating that these latter organisms protect the vitamin C from atmospheric oxidation, even at a pH of 7·3–7·72. The protective action, however, was not evident in the presence of the vitamin C decomposing bacteria.

Addition of 1% glucose or lactose to the broth protected the vitamin C from oxidation not only by *Bact. coli* but also by the atmosphere. The sparing action was operative under aerobic and anaerobic conditions, but tests showed that the vitamin disappeared rapidly from the medium as soon as the sugar was completely utilized.

Mixed faecal cultures behaved similarly to pure cultures of *Bact. coli*, but the addition of 1% glucose or lactose completely protected the vitamin, as with pure cultures.—E. J. M. Hayward.

Lamanna, C. (1942). **Relation of Maximum Growth Temperature to Resistance to Heat.**—*J. Bact.* **44.** 29–35. **818**

The literature on the subject is reviewed both as regards bacteria and their spores. Original work is described with spores of the genus *Bacillus*, in which a relationship did appear between the maximum temperature of growth and the heat resistance of spores grown at the optimum temperature for sporulation. This relationship was not exact, but L. considers this to be due to other factors, such as spore coat. He divides the genus into three groups according to maximum growth temperature and spore resistance :– (a) *B. subtilis* (15 strains examined) and *B. agri* (6), (b) *B. vulgatus* (6) and *B. mesentericus* (6), and (c) *B. cereus* (20), *B. mycoides* (4) and *B. megatherium* (10). *B. cereus* he further divides into three physiological groups [see *V. B.* **12.** 481.] which show the relationship among themselves.

—E. J. M. Hayward.

Lwoff, A., & Morel, M. (1942). Conditions et mécanisme de l'action bactéricide de la vitamine C. Role de l'eau oxygénée. **[Conditions and Mode of Bactericidal Action of Vitamin C. Role of Hydrogen Peroxide].**—*Ann. Inst. Pasteur.* **68.** 323–342. **819**

Ascorbic acid inhibits the growth of *Proteus vulgaris* in synthetic medium, the duration of the inhibiting action varying from several hours at a concentration of 1 : 200,000, to several days at 1 : 10,000. The addition of peptone water, cysteine, glutathione, and sodium sulphide interferes with the inhibiting action of ascorbic acid, as also do haemolysed blood, haemin, a peroxidase, potassium ferro- and ferricyanides, and ferrous sulphate. The substances are either anti-oxidants or possess catalase or peroxidase activity.

The inhibiting action of hydrogen peroxide on the growth of the same organism in synthetic medium is prevented by the addition of haemin, catalase and ferrous sulphate, but not by cysteine. Growth of *Bacterium coli* and *Bacillus subtilis* in synthetic medium is also inhibited by ascorbic acid in a concentration of 1 : 50,000, and that of *B. subtilis* in peptone water at concentrations of 1 : 100–1 : 500. The results indicate that the inhibiting action of ascorbic acid is due to the antiseptic action of hydrogen peroxide formed in the course of oxidation.

—J. P. Gardner.

Unna, K., & Mushett, C. W. (1942). **Studies on the Biological Utilization of Esters of Pantothenic Acid.**—*Amer. J. Physiol.* **135.** 267–270. **820**

The biological activities of ethyl monoacetyl pantothenate and ethyl pantothenate were assayed using rats, chicks, and *Lactobacillus casei*. Animal assays indicated values equal to equimolecular quantities of calcium pantothenate, but *L. casei* showed very little response. The significance of different utilization of esters by micro-organisms and by animals is discussed.

—J. Duckworth.

See also abstr. **960** (mastitis), **961** (strangles), **911, 962** (calf pneumonia), **909** (brucellosis in moose), **1008** (brucellosis, TB., and mastitis control), **977** (bacteria in milk), **980–984** (meat-poisoning organisms), **988** (technique), **986–987** (media), **956–959** (antibacterial agents), **968** (fungicides).

DISEASES CAUSED BY PROTOZOAN PARASITES

Schneider, M. D. (1942). **A New Thermostabile Medium for the Prolonged Bacteria-Free Cultivation of *Trichomonas foetus*.**—*J. Parasit.* **28.** 428–429. **821**

The medium is prepared in two parts, a solid portion composed of whole egg, defibrinated ox blood, and a buffered saline solution containing glucose, and a liquid portion consisting of a buffered glucose and sodium citrate solution, to which ox serum and haematin are added. Bromcresol purple is added to the liquid portion in order to show pH changes indicating growth of the flagellate, and dried egg-shell is added " on the bottom of the egg slant to a height of 5 to 10 mm.". Tubes are sterilized in the autoclave for 30 min. at 15 lb. pressure.

It is claimed that at 37°C. cultures of *T. foetus* covered with "parafilm" last 30–60 days, with a limit of 72 days, and at room temperature for 3–4 months. After prolonged storing at room-temperature, cultures are placed in an incubator at 37°C. for 3–10 days to permit development of the flagellate before subcultures are made.—U. F. Richardson.

Beltran, E., & Vargas, L. (1941). Intentos de infección de pollos con esporozoites de *Plasmodium gallinaceum* por vía oral. **[Attempts to Infect Fowls *per os* with Sporozoites of *P. gallinaceum*].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 347–351. [English summary]. **822**

Attempts to infect fowls perorally, by means of salivary glands of *Aëdes aegypti* infected with sporozoites of *P. gallinaceum*, failed although parenteral application succeeded.—J. E.

Beltran, E. (1941). Hallazgo de *Plasmodium juxtanucleare* Versiani y Furtado en gallinas de Chiapas. **[Discovery of *P. juxtanucleare* in Fowls in Chiapas Province, Mexico].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 353–354. [English summary]. **823**

A preliminary note on the finding of *P. juxtanucleare* in fowls in Chiapas province, South Mexico [see also *V. B.* **12.** 530].—J. E.

Galliard, H., & Cèbe, J. (1941). Recherches sur les effets de la splénectomie chez le buffle au Tonkin. **[Effects of Splenectomy on Tonkin Buffaloes].**—*Rev. méd. franç. Extr.-Orient.* **19.** 38–41. **824**

Four two-year-old buffaloes were splenectomized, three of them surviving for about one year during which observations were made on parasites in their blood. Whilst no protozoa were to be found in the peripheral blood before the operation, *Theileria mutans* appeared after about one week and persisted continuously, and *Babesia bigemina*, *B. bovis*, and *B. argentina* appeared in small numbers at irregular intervals in all three animals.

Splenectomy resulted in a slight change in the white blood picture during the first few days, in conjunction with a leucocytosis and lymphocytosis.—J. E.

Rosenbusch, F., & González, R. (1940). Garrapatización y tristeza. (Tercera comunicación). **[Tick Transmission of Piroplasmosis and Anaplasmosis. III].**—*J. agron. vet., Univ. B. Aires, 1939.* pp. 39–51. **825**

From their studies of ticks from various parts of the Argentine, the authors conclude that during the warm months of the year the majority of ticks can transmit piroplasmosis and anaplasmosis. In parts of the country, especially in the north, ticks and cattle are free of piroplasms.

One generation of ticks may apparently be free of infection, although their offspring may transmit infection if weather conditions are suitable. Ticks known to be infected with piroplasms do not transmit the disease during cool weather, nor do their offspring, although the latter become infective with a rise in temperature. Infected ticks put in contact with premunized cattle gradually lose their parasites during the cold weather. —Miller Watson.

Pavlov, P. (1942). Das Vorkommen von Theileriose in Maxedonien. **[Bovine Theileriasis in Macedonia].**—*Dtsch. tierärztl. Wschr.* **50.** 458–460. **826**

An outbreak is described of bovine theileriasis in Macedonia, in which 12 out of 16 animals died in 3–5 days. Clinically the disease was characterized by fever, depression, and nervous symptoms evidenced by circling movements, but with only slight anaemia and no jaundice. The liver was enlarged and showed punctiform necrosis, and the heart muscle and kidneys showed petechial haemorrhages. The lymph nodes were enlarged, but the spleen was normal or only slightly swollen.

The erythrocytes showed a parasitic invasion with ring or rod forms of theileria, the infestation rate varying between 5% and 40%. Although blue bodies were present in lymph node and spleen smears, they could only be detected in the blood in 20% of cases. The only tick present was *Hyalomma aegyptium*.

It is thought that the parasite resembles *T. dispar*. The absence of anaemia and splenic enlargement is more in conformity with a *T. parva* infection, whilst the circling movements resemble those described in "turning sickness".]—U. F. Richardson.

Zemskov, M. V. (1940). Vozbuditel' infektsionnoĭ zheltukhi krupnovo rogatovo skota. **[The Cause of Enzootic Jaundice in Bovines].**—*Sovyet. Vet.* No. 8/9. pp. 32–37. **827**

A German translation of this paper appeared in *Z. Veterinärk.*, and has already been abstracted [see Semskow—*V. B.* **12.** 338].—A. Moldawsky.

See also absts. **902** (trichomoniasis), **963-965** (trypanosomiasis), **1009** (dourine in the U.S.A.), **1008** (anaplasms and coccidia), **966**, **967** (piroplasms and anaplasms).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Green, R. G. (1942). **On the Nature of Virus Adaptations.**—*Science.* **95.** 602–603. **828**

Filtrable viruses are highly specialized intracellular parasites which are mainly adapted to the types of cells which they invade, but which may show somewhat limited variations in their cell adaptation. They are classed broadly, however, according to the kind of cell for which they have an affinity. To a certain extent, great change can be affected in a virus by the selection of the species of animals to be injected and the choice of tissue to be used, an outstanding example being that of the distemper virus, which may be highly adapted to ferrets by host-to-host passage and by this means become less virulent for canine animals. —J. C. Buxton.

Casals, J. (1942). **Ultraviolet Light-Inactivated Antigens for Complement-Fixation Tests with Central Nervous System Virus Infections.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 501–504. **829**

A description is given of the methods employed to render avirulent certain virus antigens by exposure to ultra-violet light. Antigens were prepared from five central nervous system viruses by passage through mice and dilution of their emulsified brains in saline. The solutions were then centrifuged and the supernatant fluids alternately frozen and thawed five times. The antigens to be inactivated were exposed in quartz flasks to the rays from a mercury vapour lamp and shaken automatically at the same time. It was found by periodic intracerebral injection into mice that c.n.s. virus antigens became inactivated in from 40–90 min. by this means.—J. C. Buxton.

*Nardelli, L. (1941). **[Macroscopic and Microscopic Appearance of the Local Nodule Produced by Foot and Mouth Disease Immunization].**—*Clin. vet., Milano.* **64.** 283–291. [Abst. from abst. in *Wien. tierärztl. Mschr.* **29.** 234]. **830**

Three developmental stages were distinguished in

vaccinated animals, *viz*, an early stage with surrounding oedema and encapsulation, Al_2O_3 from the vaccine being demonstrable in the lesions; a second stage with no oedema and with thickening, the Al_2O_3 having been broken down, and a later stage when the appearance resembled that of a gland. Epithelioid cells seen were ascribed to cells of the vesicle from which the vaccine was prepared.—J. G. Carr.

Apinis, P. (1941). Das Blutbild bei der Maul- und Klauenseuche. **[The Blood Picture in Foot and Mouth Disease]**.—*Tierärztl. Rdsch.* **47.** 578–582. **831**

The author investigated the blood picture in three outbreaks involving 19 animals. The total leucocyte count rose three days before the symptoms appeared, falling to normal or slightly below normal when they appeared. If suppuration of the foot lesions followed, the total count later rose again (6–14 days). The relative proportion of polymorphs increased sharply as the symptoms appeared, lasted for about three days longer than the increase in the total count, and then decreased, but increased again if suppuration occurred. The lymphocytes showed a parallel change. The relative amount of eosinophiles dropped slightly during the fever, remaining otherwise unaltered. Other blood elements showed no definite alterations.—J. G. Carr.

—. (1941). **Swine Pox and Vaccinia.**—*J. Amer. med. Ass.* **117.** 1627. **832**

This editorial discusses some observations of Shope confirming the findings of earlier workers, that swine pox occurs as a disease *sui generis* and can be clearly differentiated from vaccinia by cross-inoculation tests. Both swine-pox virus and vaccinia cause a relatively mild skin eruption followed by a solid immunity.

Shope found that swine, free from lice, would not transmit the disease by contact, but that with louse-infested animals, cross-infection regularly appeared after 12 to 18 days. The louse apparently carries the virus mechanically. It is postulated that the control of swine pox depends on the control of lice.—R. E. Glover.

Gordon, I. (1942). **Demonstration of Antigenic Differences between Different Strains of Influenza B.** —*J. Immunol.* **44.** 231–236. **833**

A new strain of human influenza B virus, 572, has been isolated and examined. As was to be expected from previous reports, the rate of adaptation to ferrets and mice was slow as compared with strains of influenza A virus.

In vitro agglutination tests against red blood cells and mouse neutralization tests were carried out on strain 572 and the strains Lee and TM of influenza B virus [Francis (1940) and Magill (1940)], and these showed quantitative antigenic differences between the three strains. The results of the two tests were in close agreement.

Cross-neutralization tests in mice showed that an immune serum to the Lee strain protected against infection with strain 572, but an immune serum to a strain of influenza A virus did not.—E. J. M. Hayward.

Wheeler, A. H., & Nungester, W. J. (1942). **Effect of Mucin on Influenza Virus Infection in Hamsters.** —*Science.* **96.** 92–93. **834**

Hamsters are relatively insusceptible to influenza virus. In these experiments they were anaesthetized by the intraperitoneal injection of nembutal, the trachea was exposed, and 0·1 ml. of a 1% suspension of infected mouse lung, suspended in mucin or physiological saline, was injected. The incidence of gross lung lesions was approximately eight times greater in the hamsters receiving virus in mucin than in those receiving virus in saline.—John Francis.

Andrewes, C. H. (1942). **Interference by One Virus with the Growth of Another in Tissue-Culture.**—*Brit. J. exp. Path.* **23.** 214–220. **835**

A study was made of the interactions in tissue cultures of the Maitland type of influenza viruses using the W.S. strain of influenza A virus and its neurotropic variant known as "neuroflu". It was shown that when a strain of influenza A virus is given a good opportunity to grow in such a tissue culture, the medium is rendered incapable of supporting another strain of influenza virus added subsequently. It is assumed that the virus uses up some essential foodstuff in the culture and thereby renders the cells uninhabitable for a different virus of the same type. Such an altered tissue culture was still able, however, to allow the multiplication of an unrelated virus such as that of lymphogranuloma venereum. When two strains of the same virus were added simultaneously to the tissue culture, the one present in greater quantity suppressed the growth of the other.—J. C. B.

Yampol'skiĭ, Y. (1940). Diagnosticheskaya tsennost' patologo-histologicheskikh izmeneniĭ pri infektsionnoĭ anemii. **[Diagnostic Value of Pathological and Histological Lesions in Equine Infectious Anaemia]**. —*Sovyet. Vet.* No. 8/9. pp. 28–31. **836**

A general discussion on orthodox lines.—A. M.

—. (1939). Entsefalomielit loshadeĭ. Raboty IV plenuma veterinarnoĭ sektsii, Vsesoyuznaya Akademiya Sel'skokhozyaĭstvennykh Nauk imeni V.I. Lenina, 20–22 Noyabrya 1935 g. **[Equine Encephalomyelitis. Report of the 4th Plenary Session of the Veterinary Section of the Lenin Academy of Agricultural Sciences, 1935]**. pp. 108. Moscow: Sel'khozgiz. [5s.] **837**

This is a series of papers presented, by members of research institutes and of scientific expeditions, to the above meeting held in November 1935 on equine encephalomyelitis, which during the years 1932–35 had shown a considerable increase in incidence in Russia.

Papers Presented

Equine Encephalomyelitis and its Control [Makarov, P. M.]—M. reviewed many aspects of E.E. in Russia in considerable detail. The disease has been known in Russian literature since 1795. During 1900–1912, 3,636 cases, including 2,007 fatal cases, were reported in 29 government districts. In recent years the disease has tended to spread from the south to the south-east and north. Outbreaks occur periodically, usually increasing in intensity during the first 2–3 years and then subsiding. In the areas affected the incidence is higher among newly introduced horses. There appears to be a definite seasonal incidence between May and September with the highest mortality during September. Seven varieties of virus strains were obtained from 80 brains. The isolation and the purification of the virus is beset with many difficulties, auto-sterilization being one. The virus is easily killed by heat and chemicals, but survives temperatures of −180°C. It can be transmitted to, and passaged in, horses, cats, dogs, pigs, sheep, mice, rats, g. pigs, and rabbits. Fowls and pigeons are refractory. The mode of natural infection is unknown, but the disease is possibly transmitted by *Aëdes* mosquitoes. Acidophile inclusion bodies have been observed in ganglion cells of the central nervous system in naturally as well as in artificially infected animals. M. was unable to confirm the claims of Vyshelesskiĭ [*V. B.* **6.** 228.] who isolated virus from the saliva and urine of experimentally infected cats [this is probably because V. was working in error with a rabies virus (see Howitt—*V. B.* **12.** 84)—Ed.]. He also found that the saliva of an affected horse did not contain virus. Clinical symptoms are

not constant; nervous symptoms predominate. Previous to nervous manifestations, the animals show signs of fatigue, sweating, and drowsiness. The temperature may be normal or subnormal, and it may rise during the initial stages. The disease may run a mild, clinically unrecognizable form. It is supposed that many horses in affected areas acquire some degree of immunity. Diagnosis can be made by combined epizoological, pathological, and clinical findings. Haematological examinations, including blood bilirubin estimations, have some diagnostic significance, but are not of primary value for diagnosis. Early symptomatic treatment and nursing can greatly reduce losses. Bismuth and mercuric preparations in mass experiments proved to be ineffective. Specific serum treatment is of value in early cases. Active immunization with vaccines has been effective against experimental infections, but was less effective under field conditions. Measures of control and indications for research work were suggested.

Biology of the Virus [Mutovin, V. I.]—The virus passes through Chamberland L_2 and L_3, Berkefeld N and V, and Seitz-H filters. After filtration it cannot be passaged much further, it is less virulent, and the incubation period is lengthened to 10–30 days instead of four. The changes produced in the central nervous system are less pronounced and inclusion bodies are scarce when such modified virus is used to set up infection. Sunlight and methylene blue acting separately do not destroy the virus, while together they can inactivate it within 5–10 min. Using this property, M. prepared "photovaccines", the protective value of which was shown to be very high in experimental animals.

Biochemical Changes in the Serum of Affected Horses and Certain Biochemical Properties of the Virus. [Shmanenkov, N. A.]—S. dealt with changes in viscosity, refraction, surface tension, pH and alkalinity of serum. Using Sigmondi's method, the size of the virus was found to be 80–120 $m\mu$. The virus is easily adsorbed by aluminium hydroxide and other adsorbants.

Influence of Experimental E.E. on the Nitrogen and Mineral Metabolism of Rabbits. [Shokhor, N. I.]—The N metabolism and the P values are not affected. Ca values increase at the beginning and fall as the infection progresses, while the reverse is true of Mg values. Adult dogs could be artificially infected by subarachnoidal and intra-ocular injection only after the virus had been passaged through puppies.

Pathogenesis of Epizootic E.E. [Smetkin, M. F.]—S. discussed disturbances of the reticulo-endothelial system, which are manifested by stimulation in the initial stages and by blockade towards the end of the infection, and pointed out changes in composition and morphology of the blood, such as an increase in pH, lowering of alkalinity, and hyperglycaemia and glycosuria at the beginning and hypoglycaemia towards the end of the infection, and increase of lactic acid, eosinophiles, basophiles, and regenerative forms of blood cells. These changes were also observed during the latent and initial stages of the disease. The latent form is important and, according to S., not by any means rare; ten out of 65 horses examined were found to have a latent infection. It appears that during this stage the virus circulates in the blood. Using blood from a horse with a latent infection, S. succeeded, by intradermal inoculation, in infecting rabbits whose blood-brain barrier had been made permeable, whereas the inoculation of normal rabbits by various methods, using brain emulsion of the same horse, failed. S. indicates the importance of secondary factors in predisposing to infection. Pigeons, which under normal conditions are not susceptible to E.E. virus, could be infected after being fed a deficient ration. Vaccination experiments were conducted using so-called "realisats-lysats" prepared from the brain and r.e.s.

Changes in the Central Nervous System in E.E. [Lebedev, N. A.]—The changes in the c.n.s. during natural E.E. infection are unlike those caused by other neurotropic viruses. The c.n.s. as well as the liver and spleen show at the same time signs of two different processes; one which is chronic and affects mainly the mesenchyme is of the nature of a chronic endotheliosis, and the other, of more acute character, affects the parenchymatous tissues. In L.'s opinion, the chronic changes in the r.e.s. show that early circulation of the virus takes place long before nervous symptoms are clinically apparent; only after the resistance of the r.e.s. is lowered does the virus gain access to the parenchyma.

Nervous Syndrome in Acute Diffuse E.E. [Rusetskiĭ, I. I.]—R. made a detailed neurological examination of naturally infected horses and described his methods and observations; these are of interest not only in E.E., but also when applied to neurological examinations of horses in general. He described a sclerometer for the examination of muscular tone. During the course of this disease many nervous symptoms can be observed; some of these, such as dullness and stupor are due to general intoxication and others clearly indicate the seats of pathological lesions in different parts of the c.n.s. R. defines this disease as "encephalomyelitis disseminata infectiosa acuta equorum". Various symptoms of incoordination, motor irritation, deranged consciousness, and deranged senses have been described. According to R., it is misleading and incorrect to speak of excitative and dumb forms of E.E. Besides the usual form of the disease, a malignant, peracute and a benign, abortive form have been met with. Recovered animals may show asymmetry in muscular tonus and change of general behaviour and character.

Pathogenesis and Immunity in E.E. [Ponomarev, A. V.]—In experimental animals the virus shows neurotropic properties. Artificial infection of rabbits can be set up by intracerebral, intraneural, or subarachnoidal inoculation; intramuscular and intracorneal inoculations only occasionally infect, while intravenous and intraperitoneal inoculations produce infection only in rabbits with a permeable blood-brain barrier. A great deal of work has been done on the role of the blood-brain barrier. It has been found that in experimentally infected horses, but not in healthy animals, bacteriophage (used as test object) injected intravenously soon appears in the c.s.f. P. concludes that E.E. virus disturbs the impermeability of the blood-brain barrier so that there is penetration into the brain tissues. The preparation of hyperimmune serum is described. Detailed experiments on passive and active immunization under laboratory and field conditions were conducted, but the results were not always satisfactory. Experiments on local immunization of the c.n.s. have also been conducted and highly viricidal bodies have been observed in the c.s.f.

Discussion of Papers

Sinev recommended the examination of the c.s.f. for diagnostic purposes and the intracisternal introduction of serum as a therapeutic measure.

Muromtsev indicated the possibility of immunization with killed antigens.

Leonov referred to formol and pigeon vaccines said to have been used in America and described favourable results which he had obtained using lysates of reticulo-endothelial tissues prepared by Tushnov's method. He described results obtained by the Kazan Research Insti-

tute during an expedition in the Tartar Republic and dealt with conditions favouring the spread of infection. It has been observed that the incidence and mortality rate are higher among horses which have overcome an attack of piroplasmosis in the previous spring.

SMOTRIKOV reported favourable results in Siberia using hyperimmune serum for prophylaxis and treatment, eight out of nine horses recovering.

GAMALEYA urged the necessity for further study of the epizoology of the disease, especially with regard to the vector.

VYSHELESSKIĬ summarized the results of using hyperimmune serum (20 recoveries out of 30), and convalescent serum (16 recoveries out of 19). Formol vaccines proved to be effective prophylactics in 700 horses in different districts. More than one inoculation is advisable. In V.'s opinion, cats and mice are more suitable as experimental animals than rabbits; dogs are refractory. V. referred to his previous reports [*V. B.* **6**. 228.] on the isolation of E.E. virus from saliva, urine, and the intestinal mucosa of cats. [See note in abst. of paper by MAKAROV, above].

SKRYABIN urged the importance of study of vectors and clinical treatment, and stated that control must be tackled from the entomological aspect. The necessity is indicated of founding a special arachno-entomological department as a part of the Federal Institute of Experimental Veterinary Medicine and of founding an All-Union Institute for clinical veterinary science.

SHCHEPALOV indicated that virus in experimental E.E. travels along the nerves. Lesions in the ganglion nodosum of the vagus nerve differ according to whether inoculation is by the subcutaneous or intracerebral route.

CHERNYAK stated that there is not sufficient reason to regard E.E. virus as neurotropic. The degenerative and proliferative changes observed in 25 affected brains which he examined are not more characteristic than encephalitis lesions produced by many viruses, *e.g.* that of swine fever. Clinical E.E. can be experimentally produced only by intracerebral inoculation and not by the intramuscular or subcutaneous routes. For pathological-anatomical diagnosis the lesions in the liver are more important than those of the brain.

VERTINSKIĬ referred to controversies in the literature which are due to overlooking the fact that passage causes changes in the properties of the virus.

KOKURICHEV investigated early changes in the adventitious and endothelial tissue and in nerve ganglia. By intracerebral, intraneural, and intravenous inoculation of mice, lesions in the c.n.s. can be observed, but not after subcutaneous, intraperitoneal, or nasal instillation. E.E. produced artificially is unlike the natural infection.

PAVLOV referred to the increase of myelocytes in the blood and stated that nervousness in horses was one of the earliest symptoms of infection.

KOLYAKOV reported two single cases of artificial transmission of E.E. in horses by intra-ocular and intranasal inoculation with scarification of the mucous membrane. In his opinion the use of severe quarantine restrictions as part of the measures for the control of the disease would not produce results that would compensate for the inconvenience due to interference in the economic life of the areas affected. In 20 P.M. examinations, most changes were found in the livers and brains.

TSUVERKALOV criticized the paper by SHMANENKOV.

IVANOV confirmed the observations made by VYSHELESSKIĬ that rabbits of the Alma-Ata district (Turkmenia) are very resistant to E.E. infection. When transported to Siberia, however, the Alma-Ata rabbits could be easily infected.

SMIRNOV referred to some controversies in the papers and to specimens shown at the meeting.

Resolution passed by the Session

The resolution is divided into four parts. The first part contains a review of achievements based mainly, but not exclusively, on the matter in the above papers.

The second part contains recommendations for field work including measures of veterinary control such as the quarantining of affected farms, use of serum and vaccines, symptomatic treatment, and a ban on the use, for the treatment of affected horses, of convalescent serum from horses that might be infected with equine infectious anaemia.

In the third part suggestions are made to veterinary research institutes for investigational work, such as studies on the virus, its concentration, purification, and cultivation, and the extension of experimental work on pathogenesis, therapy, prophylaxis, etc.

The fourth section of the resolution deals with the organization of research work. It is recommended that all the research work on E.E. be centralized in two institutes (the All-Union Institute for Experimental Veterinary Science in Moscow and the Kazan Research Institute) and that the aspects of the disease to be dealt with at each institute be outlined. Recommendations are made for further meetings and conferences to deal with the problem in detail.—A. MOLDAWSKY.

GETTING, V. A. (1941). **Equine Encephalomyelitis in Massachusetts. An Analysis of the 1938 Outbreak, a Follow-Up of Cases and a Report of a Mosquito Survey.**—*New Engl. J. Med.* **224**. 999–1006. **838**

In July, 1938, E.E. was recognized for the first time amongst horses in south-eastern Massachusetts. 239 deaths were reported in about ten days. During the summer and early autumn, rainfall in the area was unusually heavy and as a result mosquitoes were very prevalent. The prevailing winds in this region are south-westerly, and it is suggested that the tendency for the outbreak to spread in a north-easterly direction may have been due to infection-bearing mosquitoes being carried by these winds. The movements of affected horses and the flights of infected birds are factors also concerned in the spread of the disease. There were no multiple cases of infection in human families, and multiple cases amongst horses on the same farm or in the same stable were rare. These findings confirm the experimental evidence that E.E. is not transmitted by direct contact.

The rise and fall of the outbreak and the geographical distribution of the disease were similar in human beings and in horses. Of 44 human cases investigated, diagnosis of infection with Eastern type E.E. virus seemed justified in 34. Diagnosis was based on the isolation of the virus, the presence of neutralizing antibodies, the presence of brain lesions, or on clinical findings. [See also WEBSTER *et al.*—*V. B.* **9**. 240, and FOTHERGILL *et al.*—*V. B.* **11**. 223.]

From July-October 1939, a state-wide mosquito survey was made. Fifty-six species were collected in Massachusetts. Infection was transmitted experimentally by *Aëdes cantator*, *A. sollicitans*, *A. vexans*, *A. atropalpus*, and *A. triseriatus*. *Culex*, *Anopheles*, *Mansonia*, *Uranotaenia*, and *Wyeomyia* spp. failed to transmit infection experimentally. The seasonal prevalence and geographical distribution of those suspected corresponded with those of the infection. *A. vexans* appears to be the most prevalent vector.

The data collected also suggest that man and horses are exposed ten times as much to infection when out-of-doors as they are in buildings.

KING, L. S. (1942). **Studies on Eastern Equine**

Encephalomyelitis. VI. Facilitation of Infection in the Mouse.—*J. exp. Med.* **76.** 325–334. [For previous parts, see *V. B.* **11.** 23]. **839**

This paper gives the results of an attempt to determine the conditions under which the inability of a neurotropic virus to enter the central nervous system after peripheral inoculation is operative. It was found that the injection into mice by three different routes of either 50% glycerin or concentrated NaCl greatly enhanced the activity of E.E. virus, due to the resulting dehydration of the animal tissues, including the nervous system. The withholding of water did not produce the same effect, nor did the administration of glycerin facilitate the passage of the virus when the latter was administered *via* either the eye or the nose.—J. C. B.

MORGAN, I. M., SCHLESINGER, R. W., & OLITSKY, P. K. (1942). **Induced Resistance of the Central Nervous System to Experimental Infection with Equine Encephalomyelitis Virus. I. Neutralizing Antibody in the Central Nervous System in Relation to Cerebral Resistance.**—*J. exp. Med.* **76.** 357–369. **840**

In rabbits vaccinated with E.E. virus the authors studied, first the relationship between antibody present in c.s.f. and that present in serum, and second, the bearing of this relationship upon cerebral resistance to active virus. It was found experimentally that a definite ratio existed between the concentration of neutralizing antibody in the serum, brain tissue, and c.s.f. of vaccinated rabbits and that antibody was specific for the Western or Eastern type of virus. Vaccinated rabbits which exhibited antibody in the c.s.f. survived the injection of live virus into the cerebrum and into the cisterna magna. This immunity was specific, there being no cross-reaction between Eastern and Western virus, and lack of antibody in the c.s.f., even when it was present in the serum, was associated with reduced cerebral resistance.—J. C. BUXTON.

SHAHAN, M. S., MOTT, L. O., KNUDSON, R. L., OSTEEN, O. L., & GILTNER, L. T. (1942). **The Relationship of St. Louis Encephalitis Virus to the Equine Encephalitis Problem.**—*Vet. Med.* **37.** 339–345. **841**

Fourteen horses were injected intracerebrally with St. Louis encephalitis virus and all developed a condition which differed in some respects from E.E., particularly in duration and severity. Eight horses which recovered were subsequently found to be immune to St Louis virus and three which recovered were susceptible to Western E.E. virus. St Louis virus did not appear in the blood of these experimental animals in amounts sufficiently large to be demonstrable by mouse inoculations.—J. C. BUXTON.

HOWITT, B. F. (1942). **Human Equine Encephalomyelitis and St. Louis Encephalitis in California, 1939–1941.**—*Amer. J. publ. Hlth.* **32.** 503–515. **842**

It appears evident that Western E.E. has been endemic in California for a longer time than can be estimated and figures are given relating to its occurrence during the years 1939–41. Cases of both Western E.E. and St. Louis encephalitis were found mainly in the rural areas of the two central Californian valleys, with a summer seasonal occurrence. These diseases are prevalent during the periods of greatest mosquito infestation.—J. C. BUXTON.

HAMMON, W. McD., & HOWITT, B. F. (1942). **Epidemiological Aspects of Encephalitis in the Yakima Valley, Washington: Mixed St. Louis and Western Equine Types.**—*Amer. J. Hyg.* **35.** 163–185. **843**

In the summer of 1940 the authors investigated an outbreak of encephalitis in the Yakima Valley, Washington State, during which 80 cases occurred in human beings and 20 in horses. The disease occurred in human beings of all age groups from 2–80 years and 81% of cases occurred in males. It was noticed that some patients, who had been in contact with horses, showed antibodies to the St. Louis virus only, a fact of some significance since antibodies to this virus are found in horses. The incubation period in human beings varied from 8–11 days and the mortality rate was 22·4%.—J. C. BUXTON.

REEVES, W. C., HAMMON, W. McD., & IZUMI, E. M. (1942). **Experimental Transmission of St. Louis Encephalitis Virus by *Culex pipiens* Linnaeus.**—*Proc. Soc. exp. Biol., N.Y.* **50.** 125–128. **844**

A serious difficulty is encountered in any attempt to transmit this disease experimentally, since the usual laboratory animals fail to develop a fatal encephalitis following subcutaneous inoculation, comparable with a mosquito bite. It appears, however, that certain species of *Culex* mosquitoes may act as vectors of the virus. Specimens of *C. pipiens* were infected artificially by feeding on a 10% brain suspension of the virus in 5% sheep serum and were then allowed to feed repeatedly upon two pigeons whose blood was free from antibody. Signs of infection appeared from the 4th–11th day after the infective meal. Virus persisted in the mosquito for at least 13 days.—J. C. BUXTON.

DECURTINS, A. (1940). Das bösartige Katarrhalfieber des Rindes, seine Ausbreitung und volkswirtschaftliche Bedeutung im Kanton Graubünden. **[Bovine Malignant Catarrh in Graubuenden Canton, Switzerland].**—*Inaug. Diss., Zurich.* pp. 60. **845**

This is a good review and illustrated description of bovine malignant catarrh, with special reference to its occurrence in Graubünden. The systematic description is followed by records of cases seen at the Zurich veterinary school or in practice and by statistics compiled from animal insurance records, of the occurrence of the condition in Graubünden from 1901–37. These statistics show that the disease was responsible for 7–10% of the annual losses. D.'s own experience extended during 20 years to 176 cases in 170 different herds.

D. sheds no new light on the cause of the disease; he was unable to confirm the sheep-vector theory from his own observations. He believes, however, that sudden changes to bad weather "bring out" many clinical cases, especially in spring when most cases occur.—J. E.

CASSAMAGNAGHI, A. (1940). Coriza gangrenosa. Su constatación en los ganados del Uruguay. **[Bovine Malignant Catarrh in Uruguay].**—*J. agron. vet., Univ. B. Aires, 1939.* pp. 307–322. **846**

C. describes six cases of bovine malignant catarrh occurring in Uruguay. He discusses the disease, particularly from the point of view of differential diagnosis. —MILLER WATSON.

STEARNS, T. W., & MCNUTT, S. H. (1942). **Sporadic Bovine Encephalomyelitis: Filtration of the Causal Agent.**—*Amer. J. vet. Res.* **3.** 253–257. **847**

Attempts to filter the causal agent of sporadic bovine encephalomyelitis through Berkefeld N and V candles are described. Of 34 filtrates only 15 contained sufficient agent to infect g. pigs, while in no case was the concentration sufficient for satisfactory assay with chick embryos. Recent work indicates that small coccus-like bodies may be the active agent, their size accounting for the difficulties of filtration.—D. D. O.

I. GRAU, H. (1942). Zur Diagnosestellung bei ansteckender Schweinelähme in den Veterinäruntersuchungsämtern. **[Diagnosis of Porcine Encephalo-**

myelitis in the Veterinary Investigation Offices].—*Tierärztl. Rdsch.* **48.** 45–48. **848**

II. BAUMANN, R. (1942). Die Feststellung der ansteckenden Schweinelähme. **[Diagnosis of Porcine Encephalomyelitis].**—*Wien. tierärztl. Mschr.* **29.** 49–57. **849**

I. In this second report on experiences in the laboratory diagnosis of P.E. [see also *V. B.* **12.** 275.], G. states that he has found five sites of choice in the central nervous system for the taking of samples for histological examination. The sites are (1) a block of tissue cut out of the mid-brain to include the pons and corpora quadragemina, (2) a transverse section of the brain stem immediately below the centre of the cerebellum, (3) a similar section through the medulla oblongata, and (4) and (5) sections of the spinal cord from the anterior cervical and lumbar regions. These sites are illustrated in two figures and advice is given on how best to secure the specimens.

Fresh material received at the laboratory can be processed and examined in a minimum of about 18 hours, but in less than half that time if the specimens are immersed in formalin before despatch. This involves extra work at the sender's end (sectioning of the head or removal of the brain and spinal cord portions), and so ways to facilitate this are discussed.

II. A recapitulation and concise account, useful for reference, of the diagnostic features of P.E., chiefly from the histopathological aspect.

For rapid laboratory diagnosis, B. recommends that frozen sections be placed first in 50% alcohol before being stained, in order to remove fatty substances and to obtain as clear a picture as possible.

Histological differential diagnosis from swine fever, Aujeszky's disease, piglet influenza, and paratyphoid is briefly reviewed and MICHALKA's recent observations are discussed [see *V. B.* **12.** 86, 275 and 584].—J. E.

I. —. (1942). Deutsches Reich. Runderlass des Reichsministers des Innern, betr. Bekämpfung der Schweinepest und der ansteckenden Schweinelähme. **[Germany: Circular on Control of Swine Fever and Porcine Encephalomyelitis].**—*Reichsgesundheitsblatt.* **17.** 754. **850**

II. —. (1942). Deutsches Reich. Runderlass des Reichsministers des Innern, betr. Bekämpfung der ansteckenden Schweinelähme. **[Germany: Circular on Control of Porcine Encephalomyelitis].**—*Ibid.* 789. **851**

I. An order is made enacting that wood removed from infected pigsties which have been broken down due to the impossibility of disinfecting them, must not be kept for firewood, etc., but must be destroyed by fire in order to eliminate the risk of spreading these infections.

II. As a result of recent research demonstrating the resistance of the virus to desiccation and cold, it is ordered that infected sties vacated and cleaned out must remain vacant for eight weeks in the summer and must not be occupied at all in the winter, so as to ensure the dying out of infection in the meantime.—J. E.

RAY, J. D., & WHIPPLE, G. E. (1942). **Effect of Heat on Immunizing Properties of Hog Cholera Virus.**—*Iowa Vet.* **13.** No. 4. 5–12. **852**

The heating of swine fever virus through a range of 50°–57°C. for one hour partially destroys its antigenic property. Virus heated at 45°C. for four hours, however, remains an efficient antigen. As temperatures up to 60°C. are frequently recorded in closed cars in summer in the U.S.A., the necessity for carrying virus under refrigeration is stressed. Heating at 58·5°C. for one hour completely destroys the virulence but only partially destroys the antigenic property. The possibility of using such virus as a vaccine is discussed. Preliminary results indicate that its efficiency may equal that of crystal-violet vaccine.—D. D. OGILVIE.

KERNKAMP, H. C. H., & ROEPKE, M. H. (1942). **The in vitro Neutralization of Hog-Cholera Virus with Hog-Cholera Antiserum.**—*Amer. J. vet. Res.* **3.** 300–303. **853**

Swine fever virus and serum in a range of mixtures from 1 : 0·67–1 : 30 were incubated together in two series for one hour and five hours respectively. Pigs were then each inoculated with 2·5 ml. of one of the mixtures per 50 lb. body weight. All pigs which received virus-serum mixtures incubated for one hour and in a ratio of 1 : 2·5 or less, succumbed. When the incubation period was five hours, however, the virus was neutralized in the mixture ratio 1 : 1·34 and all larger ratios. It is concluded that *in vitro* neutralization of S.F. virus by serum does occur, but that for neutralization of virus by equal quantities of serum incubation for five hours is required.—D. D. OGILVIE.

QUIROGA, S. S., & SCHANG, P. J. (1938). El método intradérmico de A. Donatien y F. Lestoquard en el diagnóstico de la peste porcina. **[Studies on Donatien and Lestoquard's Intradermal Test for Swine Fever].**—*J. agron. vet., Univ. B. Aires, 1937.* pp. 265–273. **854**

The authors carried out a number of trials with the virus + castor oil intradermal test advised by DONATIEN & LESTOQUARD [*V. B.* **6.** 231 and **7.** 615.] for the diagnosis of S.F. They did not obtain a single positive reaction except when *Salmonella cholerae-suis* was added to the virus + castor oil emulsion.

They conclude that the method is not specific for S.F., and only indicates the presence of *S. cholerae-suis* infection which may be present in conditions other than S.F.—MILLER WATSON.

PAGE, W. G., & GREEN, R. G. (1942). **An Improved Diagnostic Stain for Distemper Inclusions.**—*Cornell Vet.* **32.** 265–268. **855**

The demonstration of inclusion bodies as a laboratory technique for the diagnosis of canine distemper was described by GREEN & EVANS [*V. B.* **9.** 709.] and has been found a reliable method for the early recognition of distemper outbreaks in dogs, foxes, and mink. An improved staining procedure is described, using Shorr's single differential stain, here designated S3, after previously staining with Harris' haematoxylin. With tissues stained in this manner, nuclei are sharply and distinctly defined. The cytoplasm has a greenish blue colour, erythrocytes appear an orange red, and the inclusion bodies are stained brilliant red. Paraffin sections or fixed smears may be used. Smears from bladder, bronchial, and nasal epithelium generally contain considerable cellular débris which stains bluish green as does the cytoplasm, while the inclusion bodies exhibit a brilliant red colour.—S. J. GILBERT.

WISNICKY, W., & WIPF, L. (1942). **Significance of Inclusion Bodies of Distemper.**—*Amer. J. vet. Res.* **3.** 285–288. **856**

The differentiation of distemper inclusion bodies in foxes and mink is discussed. Typical distemper inclusion bodies are eosinophilic, comparatively large, and occur singly. Non-distemper inclusions occur as small groups of eosinophilic bodies in the cytoplasm of epithelial cells. Another type resembles the typical distemper inclusion, but is frequently dissociated from the cytoplasm and possesses refractive granules. Inclusion bodies of distemper may break down and, appearing as poorly staining granules, are difficult to

differentiate. It is concluded that distemper diagnosis should not be based on inclusion bodies alone.
—D. D. OGILVIE.

*BIANCHI, E. (1941). Sulla natura del virus dell' attuale moria del pollame. **[Nature of the Virus of the Poultry Disease at present Occurring in Italy].**—*Clin. vet., Milano.* **64.** 323–330. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 620]. **857**

A description of an outbreak of a virus disease of fowls. The clinical picture, P.M. appearance, and transmissibility resembled those of infectious laryngotracheitis. Points of difference were the high mortality rate, the presence of less pronounced lesions in the upper respiratory tract and the frequency of brain symptoms. B. considers that the differences may be due to a variation in the virus from the typical strain. The virus differed from those of fowl plague and fowl pox. Immunization with organ emulsion and a tracheal exudate did not prevent contact infection. Fowls, pheasants, turkeys and guinea fowl were susceptible.
—A. MOLDAWSKY.

BECK, A. (1942). Eine auf Haushühner übertragbare Fasanenseuche (Geflügelpest). **[Fowl Plague in Pheasants and its Transmission to Fowls].**—*Berl. Münch. tierärztl. Wschr.* May 29th. 168–170. **858**

A description of outbreaks of fowl plague introduced by pheasants imported from Eastern countries. This confirms the reports of BAUMANN [*V. B.* **12.** 537.] and TRAUB [*V. B.* **13.** 90.], without contributing anything new.—TJ. BAKKER.

MACNABB, A. L. (1942). **Psittacosis.**—*Canad. J. comp. Med.* **6.** 226–233. **859**

A review is made of the literature dealing with this disease as well as its transmission to, and occurrence in, human beings. The presence of the virus in parrots was first noted in 1930 and all available evidence points to its being the largest known filtrable virus. Mice, rabbits, and rhesus monkeys as well as canaries and members of the parrot family, are susceptible and human beings, who become affected by inhalation only, may become infected by either direct or indirect contact. The virus is present in the blood during the early stages of the disease in man and in the sputum throughout the time of infection. It is possible for recovered cases to become carriers for a limited time. Diagnosis may be effected by the direct injection of sputum into mice which are kept under observation for one month when inclusion bodies may be found in spleen and liver smears if they contract infection. There is no practical method of vaccination against the disease.—J. C. B.

SMADEL, J. E., & WALL, M. J. (1942). **Lymphocytic Choriomeningitis in the Syrian Hamster.**—*J. exp. Med.* **75.** 581–591. **860**

Young adult Syrian hamsters were given intracerebral and intraperitoneal inoculations of lymphocytic choriomeningitis virus and it was found that the resulting systemic disturbance rarely caused any obvious signs of illness. Nevertheless, the virus was demonstrable in large quantity in the blood, urine and organs. A specific soluble antigen was demonstrable up to the 14th day when antibodies began to appear. The circulatory virus disappeared after the fourth week and neutralizing antibodies appeared in the serum. Both types of antibodies persisted for several months.
—J. C. BUXTON.

LUMSDEN, L. L. (1942). **An Epidemiological Study of Poliomyelitis in Mississippi in 1941.**—*Publ. Hlth Rep., Wash.* **57.** 729–752. **861**

The evidence suggests that the infection was spread, not by direct contact, but by unknown factors. It is possible that rats, birds, fowls, and cattle acted as reservoirs of infection and that houseflies (*Musca domestica*), stableflies (*Stomoxys calcitrans*), blowflies, mosquitoes, and other insects were the vectors.

WAGENER, K., & MITSCHERLICH, E. (1942). Die europäische Kerato-Conjunctivitis infectiosa des Rindes, eine Rickettsiose. **[European Infectious Kerato-Conjunctivitis of Cattle, a Rickettsiasis].**—*Berl. Münch. tierärztl. Wschr.* Oct. 2nd. 291–294. **862**

Investigations carried out into an outbreak of contagious kerato-conjunctivitis of cattle at Lüneburg, Germany, resulted in the successful transmission of the disease by the injection of infected conjunctival secretion into the conjunctival sac of healthy calves, through 13 passages. Rickettsia were detected in only two out of 15 naturally infected animals, but could be regularly demonstrated in all of the 37 calves infected experimentally from animals in the acute period of the disease. Filtration experiments demonstrated that the infective agent was not smaller than rickettsia, and that there was no reason to suppose that a virus was present.

Attention is drawn to the fact that the disease occurs almost exclusively in the summer and chiefly affects calves. Both eyes are affected and there is no febrile reaction. Inflammation of the conjunctiva and cornea occurs and may be so severe as to lead to a reddish-yellow discoloration of the greater part of the cornea; in severe cases the iris may be affected, but no changes have been detected in the lens or retina. The condition causes retardation of growth in calves and a decrease of the milk yield in cows.

It is concluded that the disease is due to *Rickettsia conjunctivitis* which may be identical with *R. conjunctivae* described by COLES in South Africa.—U. F. R.

See also abstr. **779** (mastitis aetiology), **902** (vesicular exanthema), **909** (brain disease in moose).

IMMUNITY

I. STANTON, A. H., MEUNNING, L., KOPELOFF, L. M., & KOPELOFF, N. (1942). **Spinal-Cord Section and Hemolysin-Production in the Rat.**—*J. Immunol.* **44.** 237–246. **863**

II. KOPELOFF, L. M., & STANTON, A. H. (1942). **The Effect of Body-Temperature upon Hemolysin-Production in the Rat.**—*Ibid.* 247–250. **864**

I. The haemolysin response to injection with sheep red blood cells, in seven rats in which spinal section had been carried out at the level of the first or second thoracic vertebra, was definitely lower than in five unoperated controls when all were kept in a warm box of which the temperature was not closely controlled. Similarly, of 19 operated animals 16 showed little or no haemolysin production as compared with 4 of 13 animals in which section was at a much lower level, and eight of 28 unoperated controls. When the temperature was strictly controlled so that the body temperature was normal, there was no difference in response between three rats with spinal section at the higher level, two rats with lower level section, and two unoperated controls, whether inoculation was intravenous or intra-abdominal. When the temperature of the box was maintained at 27·3°C., however, and the corresponding average body temperatures of operated and unoperated rats were 29·5° and 35·5°C., there was a greatly diminished haemolysin production in the former animals. Of 14 operated rats none showed any haemolysin, while

nine out of ten controls gave a positive response. Thus it appears that high section of the spinal cord only interferes with haemolysin production in rats when the body temperature is allowed to fall below normal.

II. The results obtained in I are confirmed and an experiment is also described in which six rats were injected with r.b.c. immediately after operation at the high level, and their body temperature kept so that it averaged 1·3°C. above normal for 36 hours and then chilled at 5°C. below normal for five days. Seven controls were similarly injected and kept in the same box. Titrations of haemolysin at this time gave much lower figures for the operated animals than the controls. After a further 36 hours when the temperature of the operated rats was maintained at a normal level and that of the controls at 2·5°C. above normal, both groups were similar in titre, that of the controls having fallen slightly in the interval and that of the operated rats having risen. The authors realize that further controls must be introduced before this can be explained.—E. J. M. Hayward.

*Ramon, G., & Boivin, A. (1941). Le dosage, par la méthode de floculation, de l'antigène glucido-lipidique et de l'anticorps correspondant. [**Estimation of Glycolipoid Antigen and of Corresponding Antibodies by Flocculation**].—*C. R. Soc. Biol. Paris.* **135.** 230. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 107]. **865**

Mixtures of antigen and horse antiserum flocculate first in the tube in which the antigen is just neutralized. This mixture is not toxic for mice. The supernatant obtained after centrifuging various mixtures is non-toxic only in this case or when excess of antibody is present. By taking 1 : 100 of the M.L.D. of antigen as a unit (approx. 0·1 mg.), the serum can be standardized and used to determine the antigen in other preparations by *in vitro* technique. The antigen used was prepared from *Salmonella typhi*.—J. G. Carr.

de la Rivière, R. D., & Kossovitch, N. (1940). Propriétés des immunsérums obtenus par l'inoculation aux animaux de sérums sanguins ayant subi l'action de certains agents physiques. [**Properties of Immune Sera Obtained by Inoculation of Animals with Blood Sera Submitted to the Action of Certain Physical Agents**].—*Ann. Inst. Pasteur.* **65.** 63–66. **866**

This is the first part of a series of researches on this subject. Sera of various species were acidified with acetic acid to a pH of 6·0–6·5, and heated in a water-bath until the albumin was completely coagulated (25–30 min.). The solid portion was filtered off and dried. When resuspended in saline it was found to give high antibody titres when inoculated into rabbits, the antibody remaining species specific and identical with that produced by untreated serum albumin. Such preparations of antigen, being easily preserved, may be of value in serological work.—J. G. Carr.

Pauling, L., & Campbell, D. H. (1942). **The Manufacture of Antibodies in vitro.**—*J. exp. Med.* **76.** 211–220. **867**

An amplified version, giving experimental details, of results published in summarized form in a previous article [see *V. B.* **12.** 592].—J. Lochiel McGirr.

See also abst. **786**, **787** (diagnosis of TB.), **805**, **806**, **811** (of brucellosis), **829** (of virus diseases), **854** (of swine fever), **993** (of trichinosis), **807**, **808** (immunization against brucellosis), **781** (against anthrax), **814** (against tetanus), **830** (against foot and mouth disease), **840** (against equine encephalomyelitis), **852**, **853** (against swine fever), **896–901** (tumour immunity, **824** (effects of splenectomy on immunity).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Herter, K. (1942). Untersuchungen über den Temperatursinn von Warmblüter-Parasiten. [**Temperature Response of Parasites of Warm-Blooded Animals**].—*Z. Parasitenk.* **12.** 552–591. **868**

By means of special apparatus, investigations were carried out on the temperatures preferred by ticks, mites, lice, bugs, and fleas in cages heated at one end and cooled at the other, the arthropods being free to move about so that they would come to rest at the temperature of predilection. It is suggested that two optimal temperatures may exist for parasites, one of which attracts them to their hosts for feeding, whilst the other is most suitable for their metabolism.

It is suggested that for parasites of warm-blooded animals the temperature sense is not only a means of finding their hosts, but also a stimulus inducing the impulse of biting and sucking, and finally limiting the stay of the parasite on the host. In most cases a relationship exists between the temperature sense and the life habits of the parasites. In parasites that only seek their hosts to feed, such as argasid ticks and bugs, the predilection temperature of the hungry parasite is higher than that of the engorged animal. Larvae and adults which have the same feeding habits have the same predilection temperatures, but when the larvae of a species are not blood suckers, such as those of fleas, their optimal temperature is lower than that of hungry adults. The predilection temperature of the hungry adult is greater than that of the engorged one. In parasites whose whole development occurs on the host the temperature of preference for larvae and adults is the same, and is that of the host.

If the temperature of the host is increased by fever, the parasites' reaction to temperature is disturbed and they may leave the host.

In bugs and probably also in lice, the receptive organs of heat stimuli appear to be in the antennae. —U. F. Richardson.

Hoskins, W. M. (1940). **Recent Contributions of Insect Physiology to Insect Toxicology and Control.** —*Hilgardia.* **13.** 307–386. **869**

This paper summarizes and discusses recent papers on insect physiology which have a bearing on insect toxicology, and includes a very extensive bibliography. —W. Moore.

Eichler, W. (1940). Namensliste der Federlinge des Hausgeflügels. (Kritische Mallophagenlisten, Nr. 1.). [**List of Feather Lice of Poultry. Critical Lists of Mallophaga. I**].—*Z. InfektKr. Haustiere.* **56.** 65–75. **870**

Eichler, W. (1942). Namensliste der Haarlinge der Haussäugetiere. (Kritische Mallophagenlisten, Nr. 2.). [**List of Lice of Domestic Mammals. Critical Lists of Mallophaga. II**].—*Ibid.* **58.** 306–313. **871**

I. This list comprises 41 species of Mallophaga, some of which are of veterinary importance. No descriptions are given so that it is no use for identification purposes. The parasites are classified according to their principal host and the following hosts are considered :– domestic hen, goose, duck, turkey, guinea-fowl, peacock, and pigeon.

II. Fifteen species of Mallophaga are listed under the following hosts :– horse, cow, goat, sheep, dog, cat, and g. pig. Characters for identifying the parasites are not given. There is a note giving additions to the list of feather lice [see I].—J. B. Cragg.

Jack, R. W. (1942). **Ticks Infesting Domestic Animals in Southern Rhodesia.**—*Rhod. agric. J.* **39.** 95–109 and 202–218. **872**

This article is said to aim at placing in the hands of stockmen a popular guide to the ticks which infest domestic animals in Rhodesia, together with an account of their habits, life-histories, relation to animal disease, and measures employed for their control.

It is a good compilation of the information available, but contains nothing original. A table is given of the hosts of adult ticks recorded in Southern Rhodesia, and this information should be of considerable value to those working in tropical countries.—U. F. RICHARDSON.

ZUMPT, F. (1942). Rhipicephalus appendiculatus Neum. und verwandte Arten. VI. Vorstudie zu einer Revision der Gattung Rhipicephalus Koch. [**Studies Preliminary to a Revision of the Genus *Rhipicephalus*. VI. *R. appendiculatus* and Related Species**].—*Z. Parasitenk.* **12.** 538–551. [For previous parts, see *V. B.* **13.** 56]. **873**

The *appendiculatus* group of *Rhipicephalus* are described as characterized in the males by an apical prolongation of the anterior coxae, and a marked development of the marginal, median, and paramedian grooves. The females have no striking characteristics.

Attention is drawn to the considerable variations which may occur between individuals of the same species in this group, and the effect which premature detachment of larvae or nymphs may have on the adults developing from them.

R. neavei and *R. nitens* are considered as atypical forms of *R. appendiculatus*, and the species recognized are *R. appendiculatus*, distributed over southern Africa as far north as Kenya and Uganda, *R. pravus*, an East African species occurring as far north as Abyssinia, *R. duttoni* from the Congo basin, and *R. lundbladi* from Madeira.

In males of *R. lundbladi* the anal plates are large and broad, almost reaching the marginal festoons, the posterior end being rounded. The spiracles have a long, slender prolongation.

In the African species the anal plates are smaller, and more or less triangular, whilst the prolongation of the spiracle is shorter and broader. In *R. duttoni* the outer angle of the anal plate is pointed, and the adanal plates are absent. In *R. appendiculatus* and *R. pravus* the outer angles of the anal plates are rounded and adanal plates are present; the eyes of the former species are flat and those of the latter species convex. Complete descriptions of the four species are given, and their distribution and biological characters are discussed.

—U. F. RICHARDSON.

ROBINSON, G. G. (1942). **Fertility in the Argasid Tick, *Ornithodorus moubata*, Murray.**—*Parasitology.* **34.** 308–314. **874**

In the laboratory the following conditions are necessary for maximum egg production. The female should be re-inseminated for each batch of eggs, and this should take place a day or two before the blood meal. The relative humidity should be at least 50%, and the temperature about 30°C., although there is no marked difference in fertility over the range 25°–32°C. Females with faulty ovipositing organs should not be used. Sand should be provided for oviposition.

—J. B. CRAGG.

*GÜRTLER, J. (1941). Blutuntersuchungen bei Hunden mit Demodicosis. [**Blood Picture of Dogs with Demodectic Mange**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **141.** 508]. **875**

Twenty-one infected animals were examined. The following were essentially normal :– red cells, leucocyte count, haemoglobin content, monocytes, lymphocytes, neutrophiles. The number of eosinophiles was increased, and the polymorphs showed a shift to the left.—J. G. CARR.

See also abstr. **791** (vectors of *Pfeifferella whitmori*), **825** (of piroplasms), **832** (of swine pox), **838** (of equine encephalomyelitis), **844** (of St Louis encephalitis), **861** (of poliomyelitis), **968-971** (insecticides).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

SPINDLER, L. A. (1942). **Effectiveness of a Method of Raising Experimental Pigs free from Worm Parasites.**—*Proc. helminth. Soc. Wash.* **9.** 22–23. **876**

The method consists in the use of a special type of farrowing house with pens arranged in pairs. A few days before farrowing the sow is washed and placed in the first pen. Twenty-four hours later, she is transferred to the adjoining pen; the first pen is then thoroughly cleaned and allowed to dry for 24 hours to destroy any eggs which may have survived the washing process. The sow is then moved back to the first pen and the second pen is cleaned in the same manner. This régime is maintained until weaning time. Occasional failures to prevent infection, particularly with *Strongyloides*, seemed to be largely due to the high atmospheric humidity of the district, or to relaxation of care.

—M. L. BINGHAM.

CABALLERO Y C, E. (1939). Algunos endoparásitos de Rattus rattus norvegicus y de Rattus norvegicus albinus, del laboratorio de investigaciones médicas del hospital general de la ciudad de México. [**Some Endoparasites of Laboratory Rats in Mexico**].—*An. Inst. Biol. Mex.* **10.** 283–291. [English summary]. **877**

The author identified the following parasites in laboratory rats from the General Hospital, Mexico City :– *Hymenolepis diminuta, H. nana* var. *fraterna, Cysticercus fasciolaris*, and *Heterakis spumosa*. Of 100 rats examined, six were parasitized by *Cysticercus fasciolaris* and in two of these the parasite was associated with a malignant growth of sarcomatous type in the liver. The paper is illustrated by a number of photomicrographs.—MILLER WATSON.

*GENEFF, C. (1942). [**" Rossnitga " (Liver Fluke Disease) of Sheep in Bulgaria**]. pp. 19. Sofia : " Kotwa " Burgas. [In Bulgarian]. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 584]. **878**

" Rossnitga " is a local term for the hepatitis caused by mass larval infestation with *Fasciola hepatica*.

—A. MOLDAWSKY.

CABALLERO Y C. E. (1939). Acerca de la presencia de *Tracheophilus sisowi* Skrjabin, 1913, en los patos domésticos de México y algunas consideraciones sobre las especies hasta hoy conocidas de este género. [*Tracheophilus cymbius* **in Domestic Duck in Mexico**]. —*An. Inst. Biol. Mex.* **10.** 269–273. [English summary]. **879**

C. reports the occurrence of *T. cymbius* infestation in a domestic duck in Mexico City. He describes the parasite in detail.—MILLER WATSON.

*TARNAALA, K. (1941). [**Incidence and Control of *Cysticercus bovis* in Finland**].—*Suom. Eläinlääkäril.* **47.** 299–320. [German summary]. [Abst. from abst. in *Wien. tierärztl. Mschr.* **28.** 570]. **880**

In Finland during the years 1923–36, the number of cases of bovine cysticercosis detected during meat inspection varied from 1,192–1,667 per annum (representing 0·4–0·5% of the cattle carcasses examined).

The reasons for the continued occurrence of the infestation are given as the use of human excrement as fertilizer on pastures in the provinces (the infestation is largely picked up during the grazing season), and contamination of drinking troughs through faulty hygiene. The heaviest infestation occurs in south-east Finland. The importance of prophylaxis and efficient meat inspection is stressed.—H. D. CROFTON.

*REICH. (1941). Schweine- und Rinderfinnen am laufenden Bande. **[Cysticerci in Slaughter Animals in Russia].**—*Rdsch. Fleischbesch.* **42.** 189–190. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 492]. **881**

R. gives examples of heavy infestations with *Cysticercus cellulosae* and *C. inermis* [= *C. bovis*].

—H. D. CROFTON.

LESUK, A., & ANDERSON, R. J. (1941). **Concerning the Chemical Composition of Cysticercus fasciolaris. II. The Occurrence of the Cerebroside Containing Dihydrosphingosine and of Hydrolecithin in Cysticercus Larvae.**—*J. biol. Chem.* **139.** 457–469. [For previous article, see *V. B.* **10.** 263]. **882**

The ether-insoluble lipoids previously obtained by the authors from *C. fasciolaris* larvae were found to consist of a mixture of a saturated cerebroside and a hydrolecithin. The former consisted mainly of dihydrophrenosine, and after hydrolysis yielded galactose, phrenosinic acid, a mixture of some lower fatty acids, and a saturated nitrogenous base corresponding in composition to dihydrosphingosine. The hydrolecithin fraction consisted principally of a dipalmitolecithin, and the products of hydrolysis were palmitic acid, glycerophosphoric acid, and choline.—M. L. BINGHAM.

HUGHES, R. C. (1940). **The Genus *Hymenolepis* Weinland 1858.**—*Tech. Bull. Okla. agric. Exp. Sta.* No. 8. pp. 42. **883**

This bulletin contains the synonymy of the genus *Hymenolepis* (*sensu lato*), a list of 320 species with some of their synonyms, the orders to which the definitive hosts belong, and the geographical distribution throughout the world. There is also a list of non-valid specific names, a host list, and a list of references to recent literature.—M. L. BINGHAM.

GONZÁLEZ, J. O. (1941). **The Effect on Virulence of Trichinella Spiralis from Passage Through Rabbits, Guinea Pig and Rats.**—*Puerto Rico J. publ. Hlth.* **17.** 61–67. [In English and Spanish]. **884**

This is an abstract of a dissertation in which G. reported that the virulence of *T. spiralis* for rats was lowered by passage through rabbits and g. pigs. He showed that sojourn in rabbit muscle injured the larvae, this effect increasing with time. To account for this phenomenon he postulates the existence of a factor injurious to the larvae, which may be associated with the glycogen content of the muscle. Strains whose virulence for rats had been lowered by successive passage in rabbits and g. pigs recovered their virulence when fed to rats, their offspring proving fatal for normal rats.—M. L. BINGHAM.

WETZEL, R. (1940). Zur Entwicklung des grossen Palisadenwurmes (Strongylus equinus) im Pferd. **[Development of *S. equinus* in the Horse].**—*Arch. wiss. prakt. Tierheilk.* **76.** 81–118. **885**

W. describes infection experiments with *S. equinus* in 14 foals. The animals were each fed with a single dose of 1,000–65,000 infective third-stage larvae of *S. equinus*, and were killed (or died) at intervals of 4–158 days after infection. The morphological changes in the larvae developing in the host are described in detail, and are well illustrated. At autopsy, washings of the abdominal cavity were examined and histological examinations were carried out of various lesions of the intestinal wall, pancreas, and liver.

The third-stage larvae bored into the walls of the large bowel, particularly of the caecum. Small nodules were formed under the serous coat and in the submucosa and muscularis mucosae, and the third ecdysis occurred about 11 days after ingestion of the larvae. The fourth-stage larvae then left the nodules, which became cicatrized. The larvae wandered in the gut wall and, sooner or later, broke through the serous coat into the abdominal cavity. Tracks of larvae entering the liver were first seen 19 days after infection and fourth-stage larvae in this organ and in the abdominal cavity were numerous in foals examined 54–118 days after infection. After a period of some weeks of wandering in the liver parenchyma, the larvae broke out again into the abdominal cavity, where young males and females were detected 118–158 days after infection. Fourth-stage larvae appeared also in the pancreas from the 58th day onwards and were numerous in this organ at 118 days. Numerous young male and female worms were found in the pancreas, as well as in the abdominal cavity, of a foal examined after 158 days.

The work had not been completed; up to 158 days, however, there was no evidence of the return of the sexually mature worms to the lumen of the gut. The infestation was fatal in five out of 14 cases, and symptoms of colic were common in all at about the stage of the wandering of the fourth-stage larvae within the gut wall.—H. E. HARBOUR.

SHUMAKOVICH, E. E. (1940). Ob iskusstvennoĭ dehel'mintizatsii pastbishch pri strongilyatozakh. **[Decontamination of Pastures Infested with Strongyles].**—*Sovyet. Vet.* No. 8/9. pp. 45–48. **886**

Frequent collection of dung is considered to be the most reliable prophylactic measure for the control of strongyles on horse-breeding farms, but this involves much expense for labour and may be used only in valuable studs. Experiments in chemical treatment were made; chloropicrin in 1 : 1,000 aqueous solution destroyed larvae within 3 min. when exposed in sealed vessels, but failed to destroy them in open vessels and under natural conditions owing to rapid volatilization. Chloropicrin proved, however, to be an effective decontaminant for dung preserved in open pits covered with a layer of earth soon after application and the routine wetting. Further experiments in this direction are proposed. It is probable that chloropicrin also destroys weed seeds in dung.

The natural methods of decontamination, by changing pastures, and by taking advantage of the natural thermic reaction occurring in dung [see ANTIPIN—*V. B.* **13.** 74.], are discussed.—A. M.

TETLEY, J. H. (1941). *Haemonchus contortus* **Eggs; Comparison of Those in Utero with Those Recovered from Feces, and a Statistical Method for Identifying *H. contortus* Eggs in Mixed Infections.**—*J. Parasit.* **27.** 453–463. **887**

T. measured large numbers of *H. contortus* eggs derived partly from dissections of female worms and partly from sheep faeces. The mean length and width was found to be $76{\cdot}61 \pm 0{\cdot}09\mu$ by $41{\cdot}25 \pm 0{\cdot}05\mu$ for intra-uterine eggs and $78{\cdot}49 \pm 0{\cdot}19\mu$ by $44{\cdot}90 \pm 0{\cdot}11\mu$ for faecal eggs. From his data, T. concluded that eggs swell slightly after being laid, the enlargement being more noticeable in the width than in the length. In mixed infections *Haemonchus* eggs sometimes overlap in length, and at other times in width, the eggs of other genera and T. considers that greater accuracy in estimating the numbers of *H. contortus* eggs would be achieved by applying curves containing smaller fractions

of the population, since it is to be expected that towards the centre of a distribution the proportional contamination by other species would be reduced. He adds, however, that the measurement of large numbers of eggs is an obvious requirement for the successful application of the method. He therefore suggests that the restricted range 76–81μ by 44–46μ (*i.e.*, the range covered by the means $\pm$ 0·6745 times the standard deviation, theoretically enclosing 25% of the population) would ensure the more accurate estimate of the numbers of *Haemonchus* eggs present. [In a population normally distributed the range enclosed by the means $\pm$ 0·6745 the standard deviation covers approximately 50%, not 25%, of the total number of observations.—Ed.]

—J. N. Oldham.

*Schröder, G. (1940). Beitrag zur Lungenwurmdiagnose aus dem Kot der Rinder. **[Faecal Diagnosis of Lungworm Infestation of Cattle].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 90]. **888**

Baermann's and Wetzel's techniques, Vajda's rapid method, and flotation methods using waterglass, potash, sugar, or glycerin were tested; all methods proved useful except flotation with potash solution, but the best results were obtained by using Baermann's technique. Faecal samples should be kept in an airtight tin until examination and should not be fixed with formalin. If possible the faeces should be examined immediately after removal from the rectum, before the larvae of intestinal parasites have time to hatch out.—A. F. R.

*Krüger, F. (1940). Die Temperaturabhängigkeit des Gasstoffwechsels beim Schweinespulwurm (Ascaris lumbricoides). **[Effect of Temperature on Gaseous Metabolism of** *A. lumbricoides***].**—*Zool. Jb.* **60.** 103–128. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 308]. **889**

O_2 consumption and CO_2 production of *A. lumbricoides* were determined at temperatures between 0° and 45°C. Single definite temperature coefficients were not found. Q_{10} [which represents the ratio of the velocity constant of a biological process at a given temperature to the velocity constant at a temperature 10°C. lower] for O_2 consumption varied from 1·4–2·9 and for CO_2 production from 1·8–5·2. The magnitudes of the temperature coefficients for the two reactions are only loosely correlated.—H. L.

Mazzotti, L., & Osorio, M. T. (1941). Presencia de microfilarias sanguíneas en perros de la ciudad de México. **[Microfilariae in Blood of Dogs in Mexico City].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 363–364. [English summary]. **890**

Of 206 stray dogs examined in Mexico City, 53 had microfilariae in the blood indistinguishable from those of *Dirofilaria immitis*. Thirty of the dogs were examined P.M. for adult filariae, but none were found.

—J. E.

Drechsler, C. (1941). **Predaceous Fungi.**—*Biol. Rev.* **16.** 265–290. **891**

This is a comprehensive review, including many of D.'s own observations, of the predaceous fungi. Among 53 species reported as subsisting by the capture of motile animals, 25 are hyphomycetes, which include 21 that capture nematodes and one species that captures amoebae. Nineteen of the nematode-capturing species have specialized predaceous organs, such as adhesive networks, stalked adhesive knobs, adhesive columnar processes, constricting rings, and non-constricting rings. Of 25 phycomycetes of the Zoopagaceae, which capture animals through adhesion to virtually undifferentiated mycelial hyphae, 21 species prey on amoebae and three prey on nematodes. The recent literature on the feasibility of employing predaceous fungi in biological control of various parasitic nematodes is discussed. [See also *V. B.* **9.** 632, **10.** 594 and 848, and **13.** 57.]

—M. L. Bingham.

See also absts. **1008** (research in the U.S.A.), **910** (parasites in equine colic), **909** (moose parasites), **989** (diagnosis of liver fluke), **990** (of trichinosis), **972-974** (anthelmintics).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Müller, H. (1942). Ein Beitrag zur Frage der angeborenen Hornhautstaphylome. **[Congenital Corneal Staphyloma in a Foal].**—*Tierärztl. Rdsch.* **48.** 246–248 and 261–263. **892**

M. gives a detailed account of a congenital corneal staphyloma of the right eye in a four-month-old thoroughbred foal which was treated by enucleation of the eyeball. The staphyloma measured 5 × 3 × 1 cm. and had caused atrophy of the eyeball, with degenerative changes in all its components and detachment of the retina and lens, with protrusion of the latter into the granulation tissue forming the greater part of the staphyloma. The ciliary body, retina, and choroid also protruded through the defect in the cornea and were in part present within the staphyloma.

The literature is reviewed with special reference to the views on the pathogenesis of the condition, some authors considering that congenital staphyloma is due to inflammatory changes during foetal life with resulting corneal ulceration, whilst others consider the cause to be an error of development resulting in failure of differentiation of the central portion of the cornea.

—E. G. White.

*Baligan, A. (1939). Contributo alla conoscenza delle neoplasie negli uccelli. Sarcoma a cellule polimorfe nel polmone di un pollo. **[Neoplasms of Birds. A Polymorph-Celled Sarcoma in the Lung of a Fowl].**—*Ateneo parmense.* **11.** 395–400. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 181]. **893**

Morphological description of a polymorphocellular primary sarcoma of a lung of a hen which died of fowl cholera.

*Jármai, K., & Kemény, A. (1940). Ansteckungsversuche mit dem Erreger der Hühner-Erythroleukose unter Verwendung embryonierter Truthühnereier. **[Infection Tests with the Causal Agent of Avian Erythroleucosis, using Embryonated Turkey Eggs].**—*Állatorv. Lapok.* No. 24. p. 159. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 247]. **894**

The authors confirm the possibility of transmission of the causal agent to the hen's egg as early as the 4th–7th day of incubation. As the bone marrow is not formed in the hen's egg until the 10th day, it appears that some other tissue or organ of mesenchymatous origin must be a suitable medium for the development of the infective agent. It was possible to transfer the causal agent to embryonated turkey eggs, but pathogenicity for the fowl was lost in the first generation. After repeated passaging through turkey eggs, young chicks could be infected.—Ann F. Russell.

*Pentimalli, F. (1940). Sulla natura dell'agente del sarcoma dei polli. **[Nature of Causal Agent of Fowl Sarcoma].**—*Atti Accad. Italia.* **1.** 215–223. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 623]. **895**

P., who previously reported the presence of protein in clear tumour filtrates, refers to further chemical and physical observations such as the possibility of precipitation by sulphate of ammonia, absorption by aluminium hydroxide, and hydrolysis by pancreatin (Merck). In P.'s opinion this protein either represents the causal agent itself or is closely related to it.—A. M.

KREBS, C., & HARBO, J. (1942). Forsøg med cellefri Tumorekstrakter med Henblik paa Overføring og Immunitetsdannelse. Videre Undersøgelser over Krebs, Rask-Nielsen & Wagner's Sarkom. [**Research with Cell-Free Tumour Extract for Transmission of Immunity**].—*Skand. VetTidskr.* **32.** 531–547. [In Danish : English and French summaries]. **896**

This is a recent progress report on work with a round-cell neoplasm of lymphosarcoma type of mice, discovered by K. and co-workers in 1930. In this paper it is recorded that attempts to transmit the neoplasm by means of filtered extract failed, but that some evidence was obtained suggesting that it may be possible to increase the resistance of mice to the neoplasm by injecting cell-free extract.—J. E.

BLUMENTHAL, H. T. (1942). **Homoiotransplantation of Spontaneous Tumors into Mice Bearing Spontaneous Tumors.**—*Cancer Res.* **2.** 56–58. [Author's summary copied *verbatim*]. **897**

1. Mice which are bearers of spontaneous tumors offer a better soil for the growth of transplanted spontaneous tumors which develop in mice belonging to different strains than do normal mice ; they grow in about 22 per cent. of the tumor-bearing mice, when they do not grow or grow only exceptionally in the controls.

2. There are additional mice bearing spontaneous tumors, in which the inoculated tumors grow temporarily and then regress, while no growth visible to the naked eye occurs in normal mice.

3. The successful growth of the transplants has so far been observed only in mice below the age of 12 months bearing spontaneous tumors, while in older mice no growth took place.

MURRAY, W. S. (1941). **Studies on the Inheritance of Mammary Carcinoma in the Mouse. Concentration of the Extrachromosomal Factor. Physiological Stability of the Individual.**—*Cancer Res.* **1.** 123–129. [Author's summary copied *verbatim*]. **898**

1. An influence which is transmitted by the mother but not carried in the chromosomes is instrumental in causing her young to have mammary carcinoma.

2. The in-bred stocks used apparently transmit this influence in degrees or concentrations which are characteristic for each stock.

3. Physiological stability, as measured by the length of life or ability to survive, is apparently transmitted through the chromatin.

4. The amount of spontaneous mammary cancer in hybrids of these 3 stocks seems to be dependent upon 2 factors : (a) the concentration of the extrachromosomal influence transmitted by the mother ; (b) the physiological resistance of mice of various genetic constitutions to this stimulus.

FULLER, R. H., BROWN, E., & MILLS, C. A. (1941). **Environmental Temperatures and Spontaneous Tumors in Mice.**—*Cancer Res.* **1.** 130–133. [Author's summary copied *verbatim*]. **899**

Virgin female Dba mice kept under conditions of moist warmth (90–91°F. and 60–70 per cent. relative humidity) showed a striking decrease in spontaneous tumor incidence. Tumors that did appear under these conditions grew more slowly and took over twice as long to kill their hosts as tumors in animals kept at cooler, more stimulating temperatures (65°F.).

Tumor incidence at 70–75°F. was practically the same as at 65°F., but the masses grew more slowly.

The time interval from discovery of the tumor to the death of the animal was 28 days at 65°F., 47 days at 70–75°F., and ± 60 days at 90–91°F.

That the lowered tumor incidence observed in warm environments represents a real suppression rather than merely a delay to a later age is indicated by a comparison of human cancer death rates by age groups in northern and southern states. Northern rates rise much more rapidly with advancing age than do those in the south.

BRYAN, W. R., & BEARD, J. W. (1941). **Quantitative Studies on the Neutralization of Purified Papilloma Virus. I. The Relations Between Serum, Total Virus and Free Virus.**—*J. infect. Dis.* **68.** 133–170. **900**

BEARD, D., TAYLOR, A. R., SHARP, D. G., & BEARD, J. W. (1941). **Quantitative Studies on the Neutralization of Purified Papilloma Virus. II. Reversibility of Serum Effect by Simple Dilution.**—*Ibid.* **69.** 173–192. **901**

I. Employing a purified papilloma protein, isolated by fractional ultracentrifugation from infectious extracts of rabbit papillomas, the authors determined certain of the quantitative relations between the protein and homologous immune serum in the neutralization of infectivity. The absolute neutralizing capacity of a given immune serum was found to depend on the relative proportions of serum and virus present *in vitro*. The possible neutralizing effect of a given quantity of serum on a given amount of virus was quantitatively abolished by appropriate dilution of the mixture. A possible combination of serum with virus *in vitro* was thus completely reversible, indicating that the apparent effect of serum on virus took place only after the mixture was inoculated into the test tissue. Comparison of the maximum neutralizing capacities of successive dilutions of serum on optimum quantity of virus revealed an absolute diminution in serum effectiveness with dilution. The consistency of the results made possible a mathematical demonstration of the effects of all quantities of serum on all quantities of virus within the experimental range.

II. Experiments were carried out to give information concerning the behaviour of dilutions of serum-virus mixtures over the whole range of serum-virus relations within the possible experimental range, and to study the behaviour of the soluble and insoluble phases of a mixture in one region of the serum-virus relations. In studies with two different antisera, it was shown that the serum effect was completely reversible, by dilution, throughout the entire range of serum-virus dilutions possible for study.

Mixtures of serum and virus in proper concentrations precipitated. Virus and antibody were present in both soluble and insoluble phases, both free and neutralized. Serum effect was found to be reversible on dilution of either the supernatant fluid or the sediment of such a precipitated mixture.—I. W. BURTON.

DISEASES, GENERAL

*BUDACH, H. F. (1941). Bläsenausschlag und Trichomoniasis beim Zuchtbullen. [**Genital Vesicular Exanthema and Trichomoniasis in Breeding Bulls**]. —*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 591]. **902**

Vesicular exanthema and trichomoniasis are mainly

spread by the breeding bull. Several workers have recently concluded that vesicular exanthema is probably a preliminary to the attack of trichomoniasis, increasing susceptibility to this infection, which can, therefore, be regarded as of a secondary character. Methods of treatment of bulls infected with trichomoniasis have recently improved, although a complete cure has not yet been found. Success in treatment is hopeful because the parasites occur locally and almost certainly do not pass into the blood, bladder, seminal vesicle, or testicles. Prophylactic treatment and artificial insemination are important aids in preventing spread of the disease.
—E. R. PARISER.

I. VÖLKER, R., BARKE, A., & OPPERMANN, H. (1941). Die Prüfung gefässwirksamer Substanzen am überlebenden Pferdefuss. **[The Testing of Vaso-Active Substances on the Isolated Horse Foot]**.—*Dtsch. tierärztl. Wschr.* **49.** 26–28. **903**

II. VÖLKER. (1941). Ueber die Prüfung gefässwirksamer Stoffe. **[The Testing of Vaso-Active Substances]**.—*Ibid.* 108–109. **904**

III. HENKELS. (1941). Chirurgisch-kritische Betrachtungen über die vorliegenden experimentellen Untersuchungen am Gefässpräparat unter besonderer Berücksichtigung der sogenannten Rehe. **[Surgical Considerations on the above Experiments with Special Reference to Laminitis]**.—*Ibid.* 109–110. **905**

IV. NICKEL. (1941). Anatomische Bemerkungen zur Hufrehe und zu den Durchströmungsversuchen am Huf. **[Anatomical Notes on Laminitis and on Perfusion Experiments on the Hoof]**.—*Ibid.* 110–111. **906**

I. Description of a method of perfusing the horse's hoof in slaughtered animals. The forefoot is cut off as quickly as possible at the carpal joint and the preparation is perfused from the common digital artery by gravity pressure. The venous perfusate is collected and an automatic volume recorder registers the rate of outflow on a smoked drum. The perfusion fluid was either Ringer's solution or serum; the latter had a strong vasoconstrictor action. Adrenalin, "veritol", and ephedrine had a constrictor action; histamine and amyl nitrite had a dilator action. The constrictor effect of serum is the more pronounced the more haemolytic the serum is.

In connexion with ACKERBLOM'S suggestion that histamine absorbed from the intestine is responsible for the clinical picture of laminitis, it is of interest that extracts from fresh rye also have a histamine-like vasodilator effect. In one experiment 3 ml. of an extract prepared from 10 g. of fresh rye plus 500 ml. of Ringer's fluid added to 600 ml. of perfusion fluid (Ringer + serum) caused a doubling of the rate of perfusion.

II. Discussion of the results obtained by the method described in I. Not only extracts from rye but also from oats, barley, and acacia have a vasodilator action. Tartar emetic in a concentration of 1 : 40,000 has a strong dilator action. Aloes cause vasoconstriction. A preparation of citrin (vitamin P) had a strong vasoconstrictor action.

III. In laminitis both toxic and traumatic factors are considered to be present. ACKERBLOM'S theory of the origin of laminitis is criticized. Injections of histamine may bring about vasodilation, but not the other symptoms of laminitis.

IV. A discussion of the anatomical factors relating to laminitis. The maximum stress is exerted on the upper front part of the hoof; that is why in this region the blood supply to the corium is best developed; in the lateral and volar parts the mechanical stress is partly relieved by the tendon of the deep flexor which imparts to the third phalanx a tendency to rotate around its transverse axis. These factors are responsible for the fact that in laminitis a separation of epidermis and corium occurs in the front part of the hoof and that at the same time there is rotation of the third phalanx.

The mechanisms for regulating the blood supply are discussed, *viz*, capillary constriction and arterio-venous anastomoses. The arteries of the hoof lie in the volar region where they are protected from mechanical stress; they show little arborization; on the other hand the veins form a well developed network, especially dense in the corium of the front of the wall. Nerve endings are especially plentiful in the neighbourhood of the arterio-venous anastomoses.—H. BLASCHKO.

JONES, T. C. (1942). **Equine Periodic Ophthalmia.**—*Amer. J. vet. Res.* **3.** 45–71. **907**

A survey of the disease. An account is given of the condition, based on the histopathological examination of about 70 affected eyes.—D. D. OGILVIE.

BRITE, A. (1942). **A Baffling Disease of Mid-West Cattle.**—*Vet. Med.* **37.** 386–387. **908**

Haemoglobinuria in cattle of unknown aetiology has been reported from several mid-west areas in the U.S.A. The disease is entirely different from post-parturient haemoglobinuria and from the haemoglobinuria produced by *Clostridium haemolyticum-bovis*. The main P.M. differences are absence of infarcts in the liver as described in *Cl. haemolyticum-bovis* infection and lack of the advanced degeneration in the parenchymatous organs observed in post-parturient haemoglobinuria. The cause is unknown, but plant poisoning has been suspected.—N. J. SCORGIE.

FENSTERMACHER, R., & OLSEN, O. W. (1942). **Further Studies of Diseases Affecting Moose. III.**—*Cornell Vet.* **32.** 241–254. [For part II, see *V. B.* **7.** 482]. **909**

In P.M. examinations of eight moose, the following parasites were demonstrated:—*Dermacentor albipictus*, *Paramphistomum cervi*, *Fascioloides magna*, *Moniezia expansa*, *Echinococcus granulosus*, *Cysticercus* sp., *Dictyocaulus* spp. including *D. viviparus*, *Nematodirella longispiculata*, *Trichuris* sp., *Oesophagostomum venulosum*, and *Setaria labiato-papillosa*. There was evidence that one of the animals died as a result of severe distomiasis.

None of the blood sera contained agglutinins for *Bacterium tularense*. The serum of one of the animals gave a titre of 1 : 50,000 with *Brucella abortus* antigen and *Br. abortus* of the bovine type was isolated from the blood, liver, lungs, kidneys, spleen, and lymph nodes of this animal.

An attempt was made to demonstrate the presence of a virus in the brain and spinal cord of animals in which there was evidence of cerebral disturbance, but results were consistently negative.—ISOBEL W. BURTON.

GRATZL, E. (1942). Entstehung und Behandlung der Koliken des Pferdes. **[Nature and Treatment of Equine Colic]**.—*Dtsch. tierärztl. Wschr.* **50.** 141–146. **910**

According to statistics of the German army and clinics, colic in horses is most frequently caused by errors in diet, over-exertion, cold, intestinal parasites, and aneurysms caused by *Strongylus vulgaris*. The inflammation and degeneration of the plexus mesentericus and the large sympathetic ganglia of the stomach cause disharmony in the intestinal autonomic nervous system and in consequence hypersensitiveness to various forms of irritation. G. regards the administration of antispasmodics as the most important part of the treat-

ment. The use of parasympathetic excitants (physostigmine etc.) should be confined to cases of atonic paralysis of the intestinal muscular system.—J. Csonka.

Sanders, D. A. (1940). **Enzootic Bronchopneumonia of Dairy Calves.**—*Bull. Fla. agric. Exp. Sta.* No. 346. pp. 11. **911**

S. describes an enzootic broncho-pneumonia of calves and yearlings, occurring mainly during the warm moist seasons, and appearing when animals are kept in crowded insanitary conditions. These conditions, along with undernourishment and infestation with external and internal parasites, are favourable to the development of the various bacterial infections of the gastro-intestinal tract which are the precursors of broncho-pneumonia.

Bacterium coli, *Pasteurella boviseptica*, staphylococci and *Penicillium* are found to be associated with the diseased lung tissue. Transmission experiments demonstrate the fact that inoculation with fully virulent *Past. boviseptica* culture or infective blood, or exposure to diseased tissue or infected premises, are not sufficient to initiate broncho-pneumonia. Exposure to weakening influences lowering the body resistance is sufficient in itself to reproduce the disease, *Past. boviseptica* being a normal inhabitant of the upper respiratory tract of cattle. Enzootic broncho-pneumonia is not found to exist on premises where strict sanitary methods of rearing calves are practised.—Isobel W. Burton.

*Sályi, J. (1942). **[Cardiac and Skeletal Muscle Dystrophy in Young Lambs].**—*Közl. Összehas. élet- és kórtan Köréből.* **30.** 155. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 372]. **912**

S. describes the results of an investigation conducted by a number of workers in several large sheep-raising areas into what is, apparently, a relatively common musculo-dystrophic disease of young lambs. [The areas concerned, presumably Central European, are unnamed in the German abstract.] The disease generally affects lambs 6–8 weeks old. It is sudden in onset and characterized by respiratory distress and general muscular tremors, soon followed by ataxia, rapid loss of condition, and inability to stand. The termination is generally fatal, broncho-pneumonic, arthritic, and enteritic complications often supervening before death. Gross pathological changes are evident P.M. in the heart and skeletal musculature, small grey or greyish yellow areas of degeneration being found in the right ventricle, in the region of the heart valves, and throughout the skeletal musculature.

The aetiology of the condition was not elucidated. Bacteriological investigations proved entirely negative, and nutritional studies with grossly deficient diets gave no useful information. S., however, considers that the nutritional studies were not sufficiently thorough to exclude the possibility of a dietary deficiency being the cause of the disease.—J. Lochiel McGirr.

*Ipolyi, E. (1941). Spondylitis ossificans deformans bei Hund und Katze. **[Spondylitis Ossificans Deformans in Dogs and Cats].**—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 187. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 342]. **913**

Twenty-nine cats and 229 dogs were examined and 14·4% were found to be affected with spondylitis ossificans deformans. The condition follows a displacement of the intervertebral disc which may be the result of fatigue, injury, or constitutional susceptibility. The disc becomes softened and pushed forward, the periosteum is torn and ossifying periostitis sets in. Incidence of the disease is highest from 5–8 years and upwards. 50% of cases show no symptoms although changes may be advanced. The clinical signs of the condition are discussed and also the appearances seen in radiographs. —Ann F. Russell.

Koller, R. (1942). Knochenporphyrie (Knochenbräune, fälschlich Ochronose, Osteohaemochromatose). **[Porphyria of the Bones (Brown Bones, False Ochronosis, Osteohaemochromatosis)].** — *Tierärztl. Rdsch.* **48.** 77–81. **914**

The history, pathology, and symptomatology of the disease are discussed. The chemical nature of the different porphyrins (ooporphyrin, uroporphyrin, and coproporphyrin) and their fluorescence in ultra-violet light are discussed. Although the aetiology of the condition is unknown there is reason to believe that the disease is heritable, but that its occurrence is incited by certain factors, *e.g.* the occurrence of certain infectious diseases or poisoning (lead, sulfonal, trional). Palliative treatment with liver extract, calcium, and vitamin B_2 is useful. There is no evidence that porphyrins play any role in the metabolism of Ca. The brown discoloration of the bones can be produced experimentally in animals by injection of porphyrin. Once deposited in the bones, porphyrin is not broken down and remains in the bones indefinitely. It is considered probable that the disease occurs in animals more frequently than has been reported in the literature (21 cases up to 1922). —H. Laser.

Morris, M. L., Allison, T. B., & White, J. I. (1942). **The Effects of Hyperplastic Endometritis on the Blood Cytology of the Dog.**—*Amer. J. vet. Res.* **3.** 100–105. **915**

The authors describe two kinds of hyperplastic endometritis. In the first type the cervix is closed or partially closed due to oedema or fibrosis, and the uterus is often greatly distended with pus. This process is commonly known as pyometra. In the second type the cervix remains open, the uterus is not distended and there is frequently a discharge from the vulva. A description of the histology of the first type of condition is given with five good figures illustrating the lesions.

Blood studies show that a marked leucocytosis accompanies the pyometra, but that it is less in degree in the second type. In both types there is a "shift to the left" in the Schilling leucocyte count system. Characteristic large "staff" cells (Schilling), which are illustrated, are to be found in the blood films, and the authors consider them to be of diagnostic significance. —D. L. Hughes.

*Otto, H. (1941). Von der Gebärmutter ausgehende Schwangerschafts- und Geburtsstörungen. (Sammelreferat). **[Disorders in Pregnancy and Parturition Originating from the Uterus. Review].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 592]. **916**

A review of the extensive veterinary literature published over the past 60 years on the subject of pregnancy and parturition disorders of the uterus.
—J. Lochiel McGirr.

Hámori, D. (1941). Örökléstani jegyzetek, Myopia. **[Notes on Hereditary Myopia in Horses].**—*Állatorv. Lapok.* **64.** 101–105. **917**

H. summarizes his observations on 500 horses of which 227 (45·4%) were myopic. Foals and horses over 10 years old were more frequently affected. 5% of these horses were unfit for the work required. Investigations on the history of 14 myopic mares showed that 75% of the descendants were likewise myopic. H. regards the defect as a hereditary one.—J. Csonka.

See also absts. **976** (animal diseases in the Argentine), **1008-1010** (in the U.S.A.), **1012** (in Switzerland).

NUTRITIONAL AND METABOLIC DISORDERS

BRÜGGEMANN, J. (1942). "Ueber den intermediären Stoffwechsel". **[Intermediary Metabolism].**—*Tierärztl. Rdsch.* **48.** 174–175. **918**

A general review is given of the fate of absorbed foods in the animal organism and the various methods of investigating intermediary metabolism are described. The significance of enzymes and the relation of co-enzymes to vitamins are reviewed. The intermediary metabolism of carbohydrates, proteins, and minerals is discussed.—E. R. PARISER.

SPELLBERG, M. A., KEETON, R. W., & GINSBURG, R. (1942). **Dietary Production of Hepatic Cirrhosis in Rabbits with an Analysis of the Factors Involved.**—*Arch. Path.* **33.** 204–220. **919**

Cirrhosis of the liver was produced in rabbits and fatty liver in g. pigs when the animals were fed an apparently adequate diet containing approximately 20% fat, chiefly butter fat. Reduction of the fat to 5% by exclusion of butter and use of skimmed milk caused a marked reduction in liver lipids. Replacement of butter fat with cottonseed oil did not cause a decrease in the liver fat but substitution of a hydrogenated vegetable oil did cause a significant reduction. Since the degree of liver damage appeared to be influenced markedly by the type of fat present in the diet, it was suggested that the liver has difficulty in metabolizing some fats (*e.g.* butter fat and cottonseed oil) and that in such cases they become localized in the hepatic parenchyma.—J. DUCKWORTH.

WARKANY, J., & NELSON, R. C. (1942). **Skeletal Abnormalities Induced in Rats by Maternal Nutritional Deficiency. Histologic Studies.**—*Arch. Path.* **34.** 375–384. **920**

This paper is complementary to those already noted [see *V. B.* **11.** 548 and **12.** 462.] and deals with the histological features of the abnormal bones concerned. The affected structures were found to be abnormal in outline in the cartilaginous stage, while endochondral ossification was severely interfered with. Centres of ossification appeared in atypical places, and there was a marked delay in ossification, accompanied by persistence of cartilage.—ALASTAIR N. WORDEN.

LERENA, C. A. (1938). La osteomalacia. **[Osteomalacia in Cattle].**—*J. agron. vét., Univ. B. Aires, 1937.* pp. 323–339. **921**

This is a general review of the subject, including detailed descriptions of some cases with which L. dealt. —MILLER WATSON.

UNDERBJERG, G. K. L. (1940). **Effect of Avitaminosis E on Reproduction and Vitamin E Storage in the Tissues and Milk of Goats.**—*Iowa St. Coll. J. Sci.* **15.** 107–110. [Thesis: abst. only given]. **922**

Male and female goats were maintained on a vitamin E-deficient diet over a period of 4½ years, during which period no signs of sterility occurred and the seven original animals multiplied to 48. Proof that the diet was really E-deficient was obtained by feeding it to rats; this resulted in resorption gestations in females and degeneration of the seminiferous tubules in males. Although a prolonged avitaminosis E did not produce sterility in the goats, it did decrease the amount of vitamin E usually present in the milk and certain body tissues of the experimental animals. This evidence indicates that rations for goats do not require supplementation with vitamin E.—R. ALLCROFT.

HOFFMANN, W. (1942). Das Vitamin K und Vitamin-K-wirksame Kunstprodukte. **[Vitamin K and its Synthetic Substitutes].**—*Dtsch. tierärztl. Wschr.* **50.** 427–429. **923**

A discussion of the chemical composition of vitamin K and of three German commercial preparations of it for use in animals.—J. E.

ASPLIN, F. D. (1942). **Leg Weakness in Young Chickens.**—*Vet. J.* **98.** 197–200. **924**

An attempt to induce riboflavin deficiency in chicks reared in a solid-floored brooder was unsuccessful in 19 out of 20 cases, whereas curled-toe paralysis occurred in seven out of 12 chicks reared in a brooder to which a wire-floor had been adapted. In further experiments conducted in wire-floored brooders, delayed feathering, impaired growth and (in nine cases out of 12) leg weakness were observed in chicks receiving a riboflavin-deficient diet, whereas a control group receiving daily supplements of 25–50 mg. of riboflavin in addition to the basal diet grew well and remained healthy. The excreta of these two groups were collected separately, dried, and fed at a 7½% level to two further groups of chicks receiving an otherwise riboflavin-deficient mash. In both cases, the faeces were found to protect against leg weakness, but growth, feathering, and activity were better in the group receiving the excreta of the non-deficient chicks.

These results are in accordance with the findings of SCHUMACHER *et al.* [*V. B.* **12.** 48].—A. N. WORDEN.

SCHAEFER, A. E., MCKIBBIN, J. M., & ELVEHJEM, C. A. (1942). **Nicotinic Acid Deficiency Studies in Dogs.**—*J. biol. Chem.* **144.** 679–685. **925**

Symptoms of an uncomplicated nicotinic acid deficiency developed in 14–18 days in weanling dogs which were fed on a diet comprising sucrose, acid-washed casein, cottonseed and cod liver oils, and all the chemically identified members of the vitamin B complex other than nicotinic acid, biotin, inositol, and *p*-aminobenzoic acid. Administration to such animals of known quantities of nicotinic acid resulted in a growth response and an interval before reappearance of symptoms which were consistent for each individual, and a single pup could be utilized for as many as 18 assays. The method proved suitable for the determination of the nicotinic acid content of wheat, but difficulties were experienced with assays of milk, due possibly to the stimulus afforded to nicotinic acid production in the alimentary tract or tissues of the dog. Administration of sulphapyridine inhibited the effect of nicotinic acid therapy in deficient dogs, but feeding fresh liver counteracted this inhibition.

The same basal diet was used also to produce deficiency symptoms in adult dogs, in which it was calculated that the daily requirement of nicotinic acid was 200–225 mg. per kg. body weight, as compared with 250–365 mg. for growing animals.—A. N. WORDEN.

*LIEGEOIS, F. (1942). La vitamine P-P (amide de l'acide nicotinique) dans le traitement des stomatites du chien. **[Treatment of Stomatitis in Dogs with Nicotinic Acid Amide].**—*Ann. Méd. vét.* p. 65. [Abst. from abst. in *Skand. VetTidskr.* **32.** 567 and 577]. **926**

A discussion on four case records of blacktongue treated successfully with nicotinic amide in daily doses of 0·05–0·25 g.

SCUDI, J. V., & HAMLIN, M. (1942). **The Effect of Pantothenic Acid Deficiency on the Blood Lipoids of the Dog.**—*J. Nutrit.* **24.** 273–282. **927**

Pantothenic acid deficiency was induced in newly weaned puppies, in dogs 6½ months old at the beginning of the experiment and, in a less clear-cut manner, in adult dogs. The deficiency was accompanied by a lowering of total and ester cholesterol, lipoid P, and

total lipoid contents of the blood, the values showing a return to normal when calcium pantothenate was given. Blood chlorine, urea and inorganic P, and serum Na and K, were not significantly affected.

Liver changes developed in deficient dogs, and a pathological description is given of four cases.—A. N. W.

MARTIN, G. J., THOMPSON, M. R., & DE CARVALAJAL-FORERO, J. (1941). **The Influence of Inositol and other B complex Factors upon the Motility of the Gastro-Intestinal Tract.**—*Amer. J. Digest. Dis.* **8.** 290–295. **928**

The effect of various B vitamins upon the motility of the alimentary tract of nutritionally normal dogs was studied roentgenologically; a mildly constipating diet (containing 30% albumin, 0·1% agar, and 10% yeast) was fed at the time when the experiments were carried out.

It is claimed that inositol markedly increased peristalsis of both stomach and small intestine, whereas nicotinic acid produced the reserve effect. Vitamins B_1, B_6, riboflavin, choline, and pantothenate were not found to exert any effect. It is suggested that the gastro-intestinal changes which have been ascribed to vitamin B_1 deficiency may have been complicated by other B complex deficiencies.—ALASTAIR N. WORDEN.

PATTERSON, J. M., & MCHENRY, E. W. (1942). **Choline and the Prevention of Hemorrhagic Kidneys in the Rat.**—*J. biol. Chem.* **145.** 207–211. **929**

An attempt was made to decide whether the renal haemorrhages which occur in young choline-deficient rats are due to a lack of "labile methyl groups" or to a phospholipid deficiency consequent upon failure of phospholipid formation by the liver. Newly weaned rats receiving a choline-deficient ration were shown to develop enlarged and haemorrhagic kidneys with an average phospholipid concentration much smaller than that of control animals receiving supplements of choline. As triethylcholine, which does not appear to furnish labile methyl groups, was as effective as choline itself in preventing renal damage and fall in renal phospholipid concentration, it was concluded that failure of phospholipid formation is probably responsible for the renal haemorrhage.

[The protocols show that there were no significant differences between the *total* phospholipid contents of the kidneys of choline-deficient and control animals. The fall in relative concentration in the kidneys of the deficient animals appears to have been due to the increased weight of these organs.]—A. N. WORDEN.

SURE, B. (1941). **Dietary Requirements for Fertility and Lactation. XXVIII. The Lactation-Promoting Properties of Cystine when Added to Casein Diets. XXIX. The Existence of a New Dietary Factor Essential for Lactation.**—*J. Nutrit.* **22.** 491–498 and 499–514. **930**

XXVIII. The lactation-promoting properties were investigated of various oils and fats fed at a 15% level, in rations containing 17·7% purified casein, 3·7% protein derived from yeast, and starch and salt mixtures; it was found that these diets did not supply the requirements of lactation in albino rats. 20–40 mg. cystine added to the diet corrected the deficiency and lactation was successful.

XXIX. Diets in which the vitamin B complex was supplied by pure thiamine, riboflavin, pyridoxine, choline, pantothenic acid, nicotinic acid, and the "W" factor from liver extracts, produced excellent growth in albino rats, but were not adequate for reproduction or lactation, even when these supplements were greatly increased. The addition of a rice-bran or liver extract supplied a factor which resulted in a 90% success in lactation. This factor was shown to be organic in nature and was designated the "Bx" factor. It was found that *p*-aminobenzoic acid was an essential factor for lactation and reproduction, and it, or a related compound, appears to be a component of the "Bx" factor. Inositol may also be a component, but this requires further investigation.—ALFRED T. COWIE.

SMITH, S. G., REISER, R., & HARRELL, G. T. (1941). **Spontaneous Recovery from Nutritional Macrocytic Anemia in Young Swine Following Initial Estrus.**—*J. clin. Invest.* **20.** 369–378. **931**

Sixteen young pigs were fed on diets varying in their content of the vitamin B complex. Five pigs which were fed on diets partially deficient in the B-complex developed severe macrocytic anaemia. Spontaneous recovery occurred while the pigs were still on the same diet and without their receiving any treatment. The recovery took place once the normal oestrous rhythm was established. It is considered that a possible explanation of the recovery is that once the physiological strain of the onset of oestrus is passed and sexual stability attained, the vitamin B requirements of the gonads are less and so more of the vitamin is available for the haemopoietic system.—ALFRED T. COWIE.

See also abstr. **809**, **813**, **820** (growth factors), **817**, **819** (bacteria and vitamin C), **912** (muscle dystrophy in lambs), **914** (porphyria of bones).

PHYSIOLOGY AND ANATOMY

GIUSTI, L., & SOPEÑA, I. (1940). Observaciones fisiológicas en un cerdo esplenectomizado. **[Physiological Observations on a Splenectomized Pig].**—*J. agron. vet., Univ. B. Aires, 1939.* pp. 409–412. **932**

The authors carried out splenectomy on a six-month-old female pig weighing 62 kg. The animal increased in weight at the normal rate after the operation.

There was a considerable diminution in the red blood corpuscle count and this remained low permanently. Counts were made both before and after forced exercise and no difference was found.

There was a slight leucocytosis a few days after the operation and some fluctuation in the white cell count occurred thereafter, although the average was about normal. There was a considerable decrease in the blood iron and haemoglobin which persisted until death and the blood sugar level fluctuated considerably.

The animal appeared to be in perfect health and was bred although her litter of five was born dead, probably because of a fall before parturition.—M. W.

DOUGHERTY, R. W. (1942). **A Study of Drugs Affecting the Motility of the Bovine Rumen.**—*Cornell Vet.* **32.** 269–280. **933**

Access to the rumen was obtained through a rumen fistula and tracings were taken of the movements. Parasympathetic stimulants on the whole produced little effect, and eserine sulphate and arecoline hypobromide both increased movements, the former in strength and frequency and the latter in strength alone. Pilocarpine had no effect, while barium chloride was inhibitory. Acetylcholine in large doses was inhibitory and in smaller doses was without effect. Adrenaline, atropine, and histamine were all inhibitory while nicotine and copper sulphate placed upon the back of the tongue stimulated the movements, the latter after an initial

inhibition lasting one minute or so. Insufflation of the rumen with nitrogen or oxygen stimulated the movements, the effect of oxygen being greater than that of nitrogen.—A. T. PHILLIPSON.

BARCROFT, J. (1942). **The Onset of Respiration at Birth.**—*Lancet.* **243.** 117–121. **934**

The development of respiratory movements in the foetus of the sheep occurs between the 35th and 65th days of intra-uterine life and four stages can be recognized. After the 65th day the foetus becomes quiescent, but occlusion of the umbilical cord produces respiratory movements which at first are of the fully developed type but regress through the four stages as the foetus is asphyxiated. Section of the brain of foetuses in the quiescent stage produces respiratory movements which vary according to the level of section; thus if the mid-brain is cut, stage 4 is produced while section below the 12th nucleus produces stage 1. Intermediary stages are produced between these levels. At birth respirations are initiated by asphyxia and by the bombardment of the foetus by sensory impulses.—A. T. PHILLIPSON.

MÁRIÁSSY, B. (1940). Adatok a különböző korú lovak csontjainak összetételéről. **[The Composition of the Bones of Horses of Different Ages].**—*Közl. Összehas. élet-és kórtan Köréből.* **29.** 35–36. **935**

M. studied the mineral and nitrogen contents of the femur and tibia in 23 horses of different ages. The composition of the bones showed hardly any change after the second year.—J. CSONKA.

*MÖNNIG, W. (1941). Feststellung der Trächtigkeit nach der Methode Cuboni bei Pferd und Rind unter Zuhilfenahme der Quecksilberquarzanalysenlampe. **[Diagnosis of Pregnancy in Mares and Cows by Cuboni's Method Combined with a Mercury Vapour Lamp].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 252]. **936**

Neither Cuboni's test as previously used nor the same test when the result is observed under ultra-violet radiation from a mercury quartz lamp gave useful results with cow's urine. With the latter test positive results were obtained from the seventh month while with the ordinary Cuboni test fluorescence was observed only after eight months.

An advantage claimed for the mercury lamp method was that, contrary to the original Cuboni's method, negative results were always obtained when urine from non-pregnant cows was examined. In the case of pregnant mares the use of a combination of the two methods allowed pregnancy to be diagnosed after 50 days while with Cuboni's original method alone a positive diagnosis could be made only after 110 days.

—E. R. PARISER.

*KMENT, A. (1941). Schwankungen in der Tragzeit bei Zuchttieren und ihre Ursachen. **[Variations in the Period of Gestation in Animals and Their Causes].**—*Med. Klin.* **37.** 112–114. [Abst. from abst. in *Tierärztl. Rdsch.* **47.** 412]. **937**

After an examination of old herd books it was found that at present the gestation period in mares at Trakehnen is 5·5 days shorter than it was in 1868. This is due to improvement in pastures. In districts with poor pastures like Eastern Poland the gestation period is still 11·5–12·5 months. This suggests that good rations and management shorten the gestation period in mares.

The variation in the gestation period for mares is 300–410 days and for cattle 240–320 days, although a few exceptional records up to 383 days are known. Male calves are carried a few days longer and the gestation period of primiparae is shorter. The gestation period for calves born in the autumn is shorter than that for spring calves, owing to the better conditions during the summer.

For sheep the normal time is 150 days with variations from 142–164 days. Poor conditions give a shorter gestation period, contrary to the case with mares.

The gestation period in the sow varies from 106–112 days, and in the bitch from 56–74 days.—TJ. BAKKER.

FOLLEY, S. J., WATSON, H. M. S., & AMOROSO, E. C. (1942). **Further Experiments on Lactation in Thyroidectomized Rats: The Role of the Para-Thyroids.**—*J. Endocrinol.* **3.** 178–191. **938**

Thyroidectomy of 13 rats on the sixth day of lactation caused an almost, but not quite, complete cessation of milk secretion as judged from the growth and survival rates of the litters. These rats when mated again became pregnant and littered, but in no case did they rear their litters. Lactation was partially maintained in four thyroidectomized rats when part of the thyroid had been implanted under the capsule of the kidney. Replacement therapy was also attempted in 18 rats by giving varying doses of thyroxine-sodium and/or parathyroid extract, and it was found that daily doses of 10–20 Collip & Clark units of parathyroid extract partially maintained lactation.

Thyroidectomy of rats unavoidably involves removal of much of the parathyroid tissue; the resulting parathyroid deficiency is discussed and it is concluded that this partly accounts for the failure of lactation. Thyroidectomized rats do not exhibit tetany during lactation, but tend to do so at the next parturition. This stimulus of parturition in converting a latent parathyroid deficiency into acute tetany appears to resemble the sequence of events in "milk fever" in cattle.

The technique of thyroidectomy in the rat is described in detail, and the need is stressed for careful histological examination to determine the extent of thyroid and parathyroid ablation.—ALFRED T. COWIE.

BLUMENTHAL, H. T., & LOEB, L. (1942). **Effects of Progesterone on the Sex Organs and on the Production of Placentoma in the Female Guinea Pig.**—*Arch. Path.* **34.** 49–66. **939**

In a series of experiments involving 130 immature ovariectomized and non-ovariectomized g. pigs, the authors studied the effects of varying doses of progesterone, 0·20–1·00 I.U., on the sex organs, with particular reference to uterine mucosa.

It was found that progesterone alone could produce a predecidual or a decidual reaction, which was most intense with the higher doses. Anterior pituitary extracts combined with the progesterone had no intensifying effect. Mechanical stimulation by incision or insertion of a glass rod into the uterine horn, intensified the reaction and placentomas were produced; this was most marked when the progesterone injections were given after the mechanical stimulation. Oestrogen given before the administration of progesterone usually somewhat intensified the reaction, but was ineffective if given after. Prolongation of the progesterone treatment tended to diminish the reaction and to induce a refractory state. Progesterone had also a stimulating effect on the upper layers of the vaginal epithelium and, in long continued cases, on the mammary gland.

It is concluded that the refractory state of the uterine mucosa of the g. pig to mechanical stimulation from the tenth day after oestrus, is not due to exhaustion of circulating oestrogen but to a diminution of progesterone and/or the development of a refractory state as a result of the preceding period of stimulation.

—ALFRED T. COWIE.

I. Schönberg, F., & Milbradt, H. (1941). Zur Frage der Totenstarre bei ausgeschlachteten Tieren. [**Rigor Mortis in Slaughtered Animals**].—*Z. Fleisch- u. Milchhyg.* **52.** 63–65. **940**

II. Bongert, J. G. (1942). Zur Frage der Totenstarre bei ausgeschlachteten Tieren. [**Rigor Mortis in Slaughtered Animals**].—*Ibid.* 172–174. **941**

III. Schönberg, F. (1942). Kurze Stellungnahme zu obigem Artikel über die Totenstarre bei ausgeschlachteten Tieren. [**Comment on Article by Bongert on Rigor Mortis in Slaughtered Animals**].—*Ibid.* 174. **942**

I. Repeating Bongert's [*V. B.* **12.** 14.] experiments on rigor mortis in dogs, the authors were unable to confirm his results that rigor mortis can be prevented by the introduction of O_2 into the body immediately after death. Rigor mortis was observed both in unopened and in dressed carcasses. The authors therefore conclude that anaerobic conditions are not necessary for the production of rigor mortis.

II. In his reply, B. recapitulates the results of his original experiments. He was able to prevent the onset of rigor mortis in 12 electrically killed dogs by P.M. injection of air or H_3O_3 into the body cavities. He maintains that true rigor mortis can therefore only occur in the absence of air, *i.e.* in unopened carcasses.

III. In his rejoinder to Bongert's reply, S. merely reaffirms his belief in his own findings.—M. L.

I. Bongert, J. G. (1942). Zur Entstehung der Totenstarre. IV. Mitteilung. [**The Nature of Rigor Mortis. IV**].—*Arch. wiss. prakt. Tierheilk.* **77.** 223–230. [For previous parts, see *V. B.* **12.** 14]. **943**

II. Bongert, J. G. (1942). Beitrag zur Entstehung der Totenstarre. 2. Nachtrag. [**Nature of Rigor Mortis. 2nd Supplement**].—*Ibid.* 308–318. **944**

I. Continuing his experiments on dogs [see *V. B.* **12.** 14.], B. found that extension of the spinal column and limbs was necessary for the production of rigor mortis. Another of his findings was that rigor mortis of the hind limbs could be terminated by cutting the tendo Achilles and the tendons of the digits. The conclusion drawn is that tendinous tissue, fascia, etc., play a decisive role in the production of rigor mortis by keeping the muscular tissue in a state of tension.

II. B. describes the use of Mangold's sclerometer, an apparatus for measuring the hardness of tissues. The values recorded during the various phases of rigor mortis are given in tabular form and contrasted with the measurements of certain groups of muscles, taken at the same time.

In concluding this series of articles, B. summarizes his views on the nature of rigor mortis.—M. Landau.

*Tehver, J. (1940). Ueber die vordere Zungendrüse der Hausewiederkäuer. [**The Anterior Tongue Glands of Domestic Ruminants**].—*Anat. Anz.* **90.** 113–123. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 81]. **945**

In the tongue of some domestic ruminants there is a gland similar to the anterior salivary tongue glands sometimes found in man. It can be distinguished from the latter by its striped appearance. There is little detail in the abstract.—C. W. Ottaway.

*Iwanoff, S. (1940). [**Surface Relief of Hard Palate of Swine with Reference to Variability of Plicae Palatinae Transversae**].—*Yearb. vet. med. Fac., Sofia.* **16.** 341–359. [In Bulgarian]. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 146]. **946**

In the examination of 376 pig embryos, the author recognized five different types of transverse ridges on the hard palate.—C. W. Ottaway.

Westhues, M. (1942). Die Altersschätzung des Pferdes durch das Röntgenbild der Backzähne. [**Age Estimation of Horses by X-Ray of the Cheek Teeth**]. —*Tierärztl. Rdsch.* **48.** 232–234. **947**

Arising out of a law action in which the age of a horse could not be determined from the incisor teeth, W. carried out X-ray examination of the cheek teeth, which gave a reliable decision. This method is useful for telling the approximate age, as was determined from tests on horses of known age ranging from 6–20 years. The appearance of the cheek teeth is illustrated.

—J. H. Kenneth.

See also abstr. **1013** (milk secretion), **903**, **904** (vaso-active substances), **824** (effects of splenectomy), **863**, **864** (effects of spinal cord section on body temperature), **906** (anatomy of horse's hoof).

POISONS AND POISONING

Blaxland, A. J. (1942). **Fatal Phosphorus Poisoning from an Explosive Bullet.**—*Brit. med. J.* Dec. 5th. 664–665. **948**

From a description of the bullet and the results of P.M. examination, together with the clinical evidence, it appears that the cause of death was phosphorus poisoning resulting from the explosion in the tissues of the bullet which contained about 3·254 grains of P, most of which was in the nose.—R. Allcroft.

Smith, M. I. (1941). **Chronic Endemic Selenium Poisoning. A Review of the More Recent Field and Laboratory Studies.**—*J. Amer. med. Ass.* **116.** 562–566. **949**

A review is given of the problems and general hazards to man arising from the presence of toxic amounts of Se in foodstuffs. The different aspects dealt with are the absorption of Se in man in endemic areas, the relation of excreted and retained Se to the amount ingested, toxicity, cellular changes and functional derangements, the transmission of Se through the placenta, the effects of Se on respiratory and other enzymes, and the influence of dietary protein on the chronic toxicity of Se. Most of these aspects have already been dealt with in the *Vet. Bull.* [see *V. B.* **10.** 129, 296, 963; **11.** 403, and **12.** 173].—R. Allcroft.

Braude, R., & Foot, A. S. (1942). **Cacao By-Products in Pig Feeding: Cocoa-Cake Meal and De-Theobrominized Cocoa-Cake Meal as Feeding-Stuffs for Pigs.**—*Emp. J. exp. Agric.* **10.** 182–188. **950**

An initial experiment was undertaken to test the value of cocoa-cake meal as a feeding stuff for young pigs, with a view to discovering also whether the feeding value of the meal could be increased by the commercial extraction of most of the theobromine contained therein. Group feeding of 24 "weaner" pigs, divided into four equal groups, showed that when cocoa-cake meal was substituted for a part of the daily ration of wheatings, in a concentration of 8%, there was some retardation of the growth rate accompanied by general unthriftiness. One pig died after five weeks of experimental feeding and showed lesions of cardiac and digestive disturbance. Pigs fed upon partially de-theobrominized cocoa-cake meal were slightly less thrifty on the whole than control pigs fed on a usual fattening diet. A further experiment to ascertain the results of feeding untreated cocoa-cake meal to older fattening pigs in a concentration of 10% in the daily ration produced some slight unthriftiness, but no evidence of digestive disturbance or toxic effect. It is concluded that the extraction of theobromine from cocoa-cake meal renders it harmless as a feeding stuff for pigs, provided that the meal is introduced gradually

into the diet and does not exceed a concentration of more than 16%.—J. C. Buxton.

French, M. H. (1942). **The Feeding of Cottonseed to Pigs.**—*E. Afr. agric. J.* **8.** 87–91. **951**

Three feeding trials, involving 16 pigs in all, were conducted, the cottonseed being incorporated in the rations at levels of 10–25% in the course of various stages of fattening. The results were bad, the lower levels of cottonseed interfering with appetence, utilization of food, and rate of liveweight gain, and the higher levels causing death in several instances; pathological lesions were noted at slaughter in animals which had not shown marked clinical symptoms during life, and the conclusion is made that cottonseed is unsuitable for fattening pigs. [See also Sinev—*V. B.* **10.** 623 and Mozgov *et al.*—*V. B.* **12.** 608.]

Symptoms in severely affected cases included listlessness, dyspnoea, and pyrexia. P.M. changes included pneumonic lesions and enteritis.—Alastair N. Worden.

Horner, W. H., & White, W. J. (1941). **Investigations Concerning the Coumarin Content of Sweet Clover. III. The Inheritance of the Low Coumarin Character.**—*Sci. Agric.* **22.** 85–92. [For previous parts, see *V. B.* **11.** 464]. **952**

Data are given on the coumarin content of the F_1, F_2 and F_3 of crosses between varieties of sweet clover having high and low coumarin contents. It is shown that the high coumarin character is dominant and therefore the F_1 can be regarded as having a high coumarin content. Segregation in the F_2 and F_3 definitely showed that the low coumarin character is inherited as a simple recessive, but the results indicate that plants may display a considerable range in coumarin content and still be of the same genetic constitution.—R. Allcroft.

Clark, H. C. (1942). **Venomous Snakes, Some Central American Records. Incidence of Snake-Bite Accidents.**—*Amer. J. trop. Med.* **22.** 37–49. **953**

The following poisonous snakes are described:—fer-de-lance (*Bothrops atrox*), hog-nosed vipers (two species—*B. lansbergii* and *B. nasutus*), tree vipers (three species—*B. schlegelii*, *B. lateralis*, and *B. nigroviridis nigroviridis*), Goldman's viper (*B. godmani*), timbo viper (*B. nummifiera*), bushmaster (*Lachesis muta*), coral snakes (five species—*Micrurus nigrocinctus nigrocinctus*, *M. mipartitis*, *M. dissolencus dunni*, *M. clarki* and *M. nigrocinctus coibendis*), and a sea snake (*Pelamydrus platurus*).

C. quotes Amaral (1926) who, while studying the snake problem in Texas, was told that, in a period of three years, there was an annual loss of over one million dollars' worth of cattle in the state due to snake-bite.

C. has heard of no authentic cases of snake-bite of mules which appear to know when they are near a snake and will not willingly pass over or near it and, when forced, will jump over the spot. He stresses the difficulty of securing accurate information of cases of snake-bite in animals.

Prognosis of a case is good if the snake had a "food ball" (a bulging made by the last meal in process of digestion) at the time of biting; this indicates that it had used up the greater part of its venom in capturing its prey.

In Central America, 80–85% of the snake-bite cases have been due to *Bothrops* spp. and in that part of the world antibothsopic serum can be used with advantage when the type of snake causing the bite is unknown on the assumption that the venom to be neutralized is probably a snake of this type. The tropical rattlesnake (*Crotalus terrificus*) and the bushmaster require a specific antivenin.

[Literature giving accurate information on snake-bite in animals is scanty. In tropical countries, mortality from snake-bite must be appreciable and is possibly greater than is realized.]—M. H. Kyaw.

Daft, F. S., Ashburn, L. L., Spicer, S. S., & Sebrell, W. H. (1942). **The Occurrence of Hyaline Sclerosis and Calcification of Blood Vessels in Rats on Sulfaguanidine.**—*Publ. Hlth Rep., Wash.* **57.** 217–218. **954**

The authors observed extensive hyaline sclerosis and calcification of the small arteries of the heart, lungs, kidney, pancreas, and intestinal submucosa in rats which received sulphaguanidine for periods of 62–192 days at a level of 1% of a purified diet containing only six components of the vitamin B complex. Preliminary findings only are reported and it is not yet possible to indicate the role of sulphaguanidine in the development of this pathological condition.—W. R. Muir.

See also absts. **1008** (plant poisoning), **908** (?plant poisoning).

THERAPEUTICS AND DISINFECTION

Stableforth, A. W., & Higgett, S. L. (1942). **Sulphanilamide in Animals: Dosage and Tolerance.**—*Vet. Rec.* **54.** 525–532. **955**

A series of horses, cows, and dogs was given single or repeated doses of sulphanilamide, orally, or subcutaneously, and the concentration of the drug in the blood and, in the case of cows, in the milk also, was then followed. Some information is also given on the concentration of sulphanilamide in the blood and milk of one ewe. The paper contains much data. The more important findings are as follows. (a) Following oral dosing the maximum blood concentration is reached in 4–6 hours; the concentration curve tends to rise more slowly and be flatter in cows than in horses or dogs. (b) Absorption of the drug is much slower, and the blood concentration is much lower following subcutaneous injection. (c) The concentration of the excreted drug in the milk lags only slightly behind the concentration in the blood. (d) Therapeutic treatment in horses could safely commence with an initial dose of 1 g. per 10 lb. body weight, and be followed by daily maintenance doses of 1 g. per 10–20 lb. body weight; in cows a safe initial and daily maintenance dose is 1 g. per 10 lb. body weight and in dogs it is 1 g. per 15 lb. body weight. (e) A total daily dose is best divided and administered in three separate lots at eight-hour intervals to horses and dogs, and in two separate lots at 12-hour intervals to cows. (f) Toxic symptoms attributable to the drug were encountered in horses and cows when about twice the advised therapeutic doses were administered, and in dogs when the dose was about five times the advised therapeutic dose; these symptoms included sleepiness, incoordination of movement, anorexia, and, in cows, diarrhoea and a fall in the milk yield.—D. G. Davey.

Burton, H., McLeod, J. W., Mayr-Harting, A., & Walker, N. (1942). **Development of Colours from Sulphonamides (*p*-Nitrobenzenesulphonamide) under Bacterial Action and the Bearing of such Phenomena on the Theory of the Bacteriostatic and Bactericidal Activities of the Sulphonamides.**—*J. Path. Bact.* **54.** 407–419. **956**

All the bacteria investigated (a fairly representative selection) possessed in greater or less degree the capacity to produce zones of purple colouration when grown on

blood-agar media containing non-lethal concentrations of *p*-nitrobenzenesulphonamide, a substance which exhibits bactericidal powers for most, if not all, bacteria. The lethal action of this compound and the colour production from it are both apparently due to its reduction to *p*-hydroxylaminobenzenesulphonamide, and possibly to subsequent oxidative changes in this latter compound.

No evidence of colour production was obtained with organisms grown on blood media containing sulphanilamide, but a purple colour was produced by irradiation of dilute aqueous solutions of sulphanilamide, and such solutions exhibited an increased bacteriocidal effect on bacteria which are relatively insensitive to unaltered sulphanilamide.

The possible identity of these two coloured substances, and their significance in relation to the oxidation theory of sulphanilamide action are discussed and suggested as interesting subjects for future investigation.

—J. Lochiel McGirr.

Muir, R. D., Shamleffer, V. J., & Jones, L. R. (1942). **Studies Pertaining to the Antibacterial Activity of Sulfathiazole and its Methyl Derivative.**—*J. Bact.* **44.** 95–110. **957**

Sulfathiazole and sulfamethylthiazole in these experiments, *in vivo* and *in vitro*, displayed practically identical bacteriostatic effects. A synthetic medium is described, which was found to show up a significantly greater antibacterial activity of the thiazole drugs than nutrient broth; *Salmonella enteritidis* was used as the test organism. Using this medium, the authors examined various constituents of nutrient broth for their effect on this activity and several were found to inhibit it, notably peptone. This inhibiting effect was also shown by *p*-aminobenzoic acid and some of its related compounds, novocaine, *p*-nitrobenzoic acid, sulphanilic acid, and acetyl *p*-aminobenzoic acid. Hydroquinone was found to possess such marked bactericidal effect (in contrast to the bacteriostatic effect of sulfathiazole) that its inhibitory effect could not be tested.

Medication with sulfathiazole and sulfamethylthiazole protected mice against an organism of the genus *Klebsiella*, but *p*-nitrobenzoic acid did not. *p*-Aminobenzoic acid inhibited the protective action.—E. J. M. H.

Fuller, A. T. (1942). **Antibacterial Action and Chemical Constitution in Long-chain Aliphatic Bases.**—*Biochem. J.* **36.** 548–558. **958**

The compounds described are the long-chain amines, amidines, and guanidines previously shown to possess remarkable trypanocidal powers [see Lourie & Yorke—*V. B.* **11.** 58]. Many of these drugs were found to exhibit powerful antibacterial actions *in vitro* and the effects of variations in the length of the carbon chain on the activity of more than 40 compounds were investigated in relation to their action on 20 representative bacterial cultures.

In broth culture the antibacterial activity of the straight-chain ω-mono- and di-amines, amidines, guanidines, and quaternary bases was found to increase with chain length up to a maximum and then to decrease, but the corresponding changes in the di-isothioureas were irregular. Gram-positive organisms were in general more sensitive to the drug actions than Gram-negative and, on the whole, the sensitivities of all the bacteria examined were found to fall roughly in the same order for related drugs. The less strongly basic amines exhibited a relatively stronger action on the Gram-positive bacteria, while the strongly basic guanidines and quaternary bases had a relatively stronger action on the Gram-negative organisms.

The effect of serum, as indicated by the use of 50% serum-broth, was to cause an increase in the activity of the shorter chain, and a decrease in that of the longer chain, drugs. In general, these aliphatic bases were active in much higher dilutions than sulphanilamide, and had a powerful bacteriostatic action in broth and serum (media in which sulphanilamide exhibits little or no activity). Further, they were active against sulphanilamide-resistant streptococci. On the other hand, no significant therapeutic effect was obtained when they were administered systemically by the subcutaneous route to mice infected with *Streptococcus pyogenes*. Their high toxicity and the interference of serum with some of the most active of the long-chain compounds are against their therapeutic use, but F. suggests that they might be useful for local application against sulphanilamide-resistant organisms, and that the very sparing solubility of the free bases might confer advantages in the treatment of enteric infections.

—J. Lochiel McGirr.

Bornstein, S. (1940). **Action of Penicillin on Enterococci and other Streptococci.**—*J. Bact.* **39.** 383–387. **959**

For purposes of classification, the behaviour was studied of a group of enterococci and related organisms to filtrates of penicillin and to a 1% solution of potassium tellurite [see also Fleming—*V. B.* **12.** 618]. Twenty-seven strains of enterococci, representing Sherman's four types, and six strains of *Streptococcus lactis* were found to be resistant to penicillin in glucose broth and by the agar strip method. Thirteen strains of *Str. viridans* were inhibited by penicillin. The differentiation of the lactic group from *Str. viridans* is confirmed by the resistance of the former to penicillin and places *Str. lactis* in the vicinity of the enterococcus from which it can be easily differentiated by other means. The enterococci were also highly resistant to potassium tellurite while the members of the *lactis* and *viridans* groups showed varying slight degrees of susceptibility.

—R. Allcroft.

Bratlie, O. (1942). Beitrag zur Bewertung der Chemotherapie der Mastitis. **[Chemotherapy of Mastitis].**—*Wien. tierärztl. Mschr.* **29.** 97–116 and 129–134. **960**

B. considers that preventive measures such as proper hygiene and isolation etc. are of much greater importance in the control of mastitis than treatment. He discusses the technique of udder irrigation and the respective value of a number of substances commonly employed. Of the acridine derivatives trypaflavine (1 : 10,000) is said to be superior to rivanol (1 : 4,000) or entozon (1 : 1–2,000) and is streptocidal at 1 : 200,000. When saccharose is added, it is stated that better evacuation of the liquid from the udder is procured, thus avoiding harmful retention in the tissues.

The number of factors which influence the treatment explain the varying results recorded by different authors. Not least amongst these is the fact that apparent cures may be followed by relapse as long as 30 days afterwards; streptococci are excreted intermittently, so cultural examination is not always a reliable guide.

The question as to how far the infusing agent penetrates the udder tissue was investigated. Using trypaflavine (1 : 10,000) in amounts varying from 200–1,000 ml., B. found that the dorsal extremity of the udder was reached but pockets of parenchyma remained isolated. Careful massage is advocated as an adjunct to treatment, as one single irrigation given when the milk yield was below 2 gallons was as effective and more economic than several.

B. considers that treatment may markedly reduce

the streptococcal flora of the milk of the herd as a whole, although the percentage of actual cures may remain low. —N. S. BARRON.

RESHETNIN. (1940). Primenenie streptotsida i alkoholya pri myte. **[Use of Streptocid and Alcohol in Strangles].**—*Sovyet. Vet.* No. 10. pp. 53–54. **961**

Encouraging results were obtained in 19 horses treated by repeated intravenous injections of 400 ml. of a 0·25% solution of yellow " streptocid ". The disease took a mild form and when streptocid was administered early, no abscesses were formed in the lymph nodes. Similar results were obtained by the intravenous injection of an aqueous solution of alcohol (33 : 67). —A. MOLDAWSKY.

THORP, W. T. S., SHIGLEY, J. F., & ANDERSON, A. K. (1942). **Sulfapyridine in the Treatment of Calf Pneumonia.**—*J. Amer. vet. med. Ass.* **100.** 225–228. **962**

Eighteen calves with bronchial pneumonia were treated with sulphapyridine. Fifteen of them recovered, some rapidly and some slowly, and three died. P.M. examination of the fatal cases revealed kidney lesions which, in two, are described as calculi in the pelvis associated with a nephritis [the common lesions of sulphapyridine poisoning]. The treatment which seemed to yield the best results was to give high doses on the first two days and reduced doses on the next three days. The total daily dose for each of the first two days was 0·05–0·1 g. per lb. body weight. Each total daily dose was split, and either administered in two separate lots given morning and night or in three separate lots at intervals of six hours. Some experiments on blood concentration gave evidence that a concentration of 4–6 mg. % approximated to the ideal. This was attained, for example, in a calf weighing 80 lb. by administering during the five days of treatment total daily doses of 7·5 mg., 5 mg., 2 mg., 2 mg., and 1 mg. respectively. —D. G. DAVEY.

FULTON, J. D., & YORKE, WARRINGTON. (1942). **Studies in Chemotherapy. XXX. The Trypanocidal Action of Additional Aromatic Diamidines. XXXI. The Increased Toxicity of Old Solutions of Stilbamidine.**—*Ann. trop. Med. Parasit.* **36.** 131–133 and 134–136. [For previous parts, see *V. B.* **12.** 431]. **963**

XXX. Tests of various new 4 : 4′ diamidino compounds against *Trypanosoma rhodesiense* infections in mice showed that the 2-hydroxy stilbene and the monomethyl stilbene exhibited a very high degree of therapeutic activity, and that the dimethyl stilbene, the diphenyl hexane, the diphenyl urea, and the tolane compound exhibited a fair activity, while the diphenyl sulphone had no activity. When the therapeutic action of these compounds was tested against *T. congolense* in mice, only two of them, the monomethyl stilbene and the dimethyl stilbene, exerted a definite curative effect. The former was approximately as active as 4 : 4′ diamidino stilbene itself, while the latter was twice as active. [Notice that the ratio of activity of these two compounds against *T. congolense* was the reverse of what held good for *T. rhodesiense.*] Some of the compounds were also tested against *T. cruzi* infections in mice, but none had any activity.

XXXI. Experiments are quoted which show that solutions of stilbamidine (4 : 4′ diamidino stilbene) left standing and exposed to light for two days develop an increased toxicity for mice. The change in toxicity is coincident with the development of a yellow colour in the stale solution. Further standing for a period up to 14 days does not cause a further increase in toxicity. The change occurs in both the dihydrochloride preparation of the drug and the di-isethionate (hydroxy ethyl sulphonate) preparation when their solutions are exposed to light, but not when they are kept in the dark.

The authors had known of the increased toxicity of stale solutions for some time, and then they made these further experiments because of reports which they received from the Sudan stating that some cases of Sudanese leishmaniasis, treated with old solutions of stilbamidine, exhibited serious toxic symptoms, suggestive particularly of liver damage, some months after the original disease had apparently been cured. It is not clear yet how such delayed poisoning produced in human beings by old solutions of stilbamidine can be linked up with the augmented immediate toxic effects which these solutions have in mice, and there is obviously much more research to be done, but in the meantime, it is unnecessary to stress the importance of using only freshly made solutions in the treatment of man and domestic animals.—D. G. DAVEY.

I. VACCARI, I. (1942). Saggi di terapia con " naganol " e " neo I.C.I." nella tripanosi equina da *Trypanosoma brucei.* **[Naganol and " Neo I.C.I." Therapy of *T. brucei* Infection in Horses].**—*Nuova Vet.* **20.** 75–85. **964**

II. VACCARI, I. (1942). Ulteriori saggi di terapia associata (ureide-arsenobenzolo-emetico) nella infezione pura da *Trip. congolense* e infezione mista da *Trip. brucei* e *Trip. congolense* nei bovini e negli equini. **[Associated Therapy with Naganol, " Neo I.C.I." and Tartar Emetic in Pure *T. congolense* Infection and in Mixed *T. brucei-congolense* Infection in Bovines and Equines].**—*Ibid.* 159–170. **965**

I. A mule naturally infected with *T. brucei* and 11 horses subinoculated from the mule, were treated with naganol at a dose rate of 2 g. per 100 kg. body weight given in three intravenous injections over a period of 14 days, and with " Neo I.C.I.", an arsenobenzene derivative, in doses of 0·45 g. rising to 1·80 g. given every second day. The mule died and the cerebrospinal fluid was shown by mouse inoculation still to contain trypanosomes. Two horses left as controls died from trypanosomiasis. Three of the treated horses died, but no evidence of the persistence of the trypanosome infection could be obtained. Six horses appeared to make a satisfactory recovery. It is concluded that the treatment is successful if employed within 15 days of infection, but that, if treatment is delayed, structural damage done to the internal organs prevents recovery. Attention is drawn to the myocarditis produced by *T. brucei* infection, with atrophy of the muscle fibres and oedema and cellular infiltration of the connective tissue.

II. Two mules and six cattle with mixed infections of *T. brucei* and *T. congolense* were treated by the intravenous injection of naganol in doses of 2 g. per 100 kg. body weight divided into three parts and administered over a period of 14 days. Tartar emetic, 1% solution, in doses commencing at 10 ml. and rising to 50 ml., was given intravenously every second day, and on the intervening days intravenous injections of " Neo I.C.I." were administered. All the animals stood treatment well and improved in condition. One mule made an apparent recovery whilst the other died from other causes without a relapse to trypanosomiasis being detected. At the time of slaughter, subinoculation of mice failed to reveal trypanosome infection in three of the cattle, but blood from one animal produced a mixed infection of *T. brucei* and *T. congolense*, and blood from the remaining two animals produced infections with *T. congolense.*—U. F. RICHARDSON.

KURCHATOV, V. I. (1940). O khimioterapevticheskikh preparatakh pri hemosporidiozakh domashnikh zhivotnykh. [**Chemotherapeutic Preparations against Protozoan Diseases of Domestic Animals**].—*Sovyet. Vet.* No. 8/9. pp. 37–41. **966**

K. reviews papers on this subject previously published in *Sovyet. Vet.* and discusses the action of "naganin", piroplasmin [acaprin], "flavacridine", and "pirocid", and also symptomatic treatment using arecoline and $CaCl_2$ against bovine, equine, and ovine piroplasms and anaplasms. No original work is reported.—A. MOLDAWSKY.

CARMICHAEL, J. (1942). **The Chemotherapy of *Babesia canis* Infections.**—*E. Afr. med. J.* **19.** 96–99. **967**

A brief survey is made of the substances which have been used with any measure of success in the chemotherapy of *B. canis* infections. Trypan blue was used from 1909 to 1934, but it had many disadvantages; relapses after treatment with it were frequent, and serious toxic effects were sometimes exhibited. It was largely replaced by acaprin or pirevan, two similar preparations. Acaprin is a great advance on trypan blue, but the margin between the toxic dose and the therapeutic dose is small. Gonacrine, which is the same as trypaflavine, is much less toxic than acaprin. In recent years, chemotherapeutic studies with aromatic diamidino compounds have given very promising results, and C. believes that these drugs will replace the others in the treatment of *B. canis* infection. Three of them have been used :– (1) diamidino-stilbene (M & B 744) which is too toxic to be recommended; (2) diamidino-diphenoxypropane (M & B 782) which is less toxic and has a high percentage of cures to its credit when given subcutaneously in a dose of 2·5 mg. per kg. body weight on two successive days [see CARMICHAEL & FIENNES—*V. B.* **12.** 431.], and (3) diamidino-diphenylether (M & B 736), which is probably even better than diamidino-diphenoxypropane because the relapse rate seems negligible, the toxicity is low, and treatment consists of a single subcutaneous dose of 10 mg. per kg. body weight [see CARMICHAEL—*V. B.* **12.** 471].
—D. G. DAVEY.

—. (1941). **Entoma. A Directory of Insect Pest Control.** [Edited by HAMILTON, C. C.] pp. 195. New Brunswick, N.J.: Eastern Branch of the American Association of Economic Entomologists. [4th Edit.] [8vo] [$1·00]. **968**

This directory is an invaluable guide to the science and practice of pest control in the U.S.A. It lists the insecticides and fungicides in general use, scientific associations and consultants, and makers and suppliers of scientific apparatus, pest control equipment, and proprietary insecticides and fungicides.—W. MOORE.

KRANICH & NÖCKER. (1942). "T 14", ein neues, pulverförmiges Mittel zur Läusebekämpfung der Tiere. [**"T 14", a New Delousing Preparation in Powder Form for Animals**].—*Z. Veterinärk.* **54.** 45–49. **969**

Powder insecticides such as pyrethrum, sodium fluoride, chloramine, and various derris preparations proved unsatisfactory as delousing agents for horses. Thymol, naphthalene, hexachlorethane, and *p*-dichlorbenzene all had excellent killing properties when used alone, but were not satisfactory when mixed with a base such as talcum. Tobacco dust (nicotine content 0·3–0·5%) ground into a fine powder killed some of the lice within 18–24 hours but many lice recovered from its effects. Attempts to improve its killing properties by raising its nicotine content or by the addition of other substances such as potassium acetate, potassium carbonate, lead acetate, sodium sulphate, β-naphthol, and salicylic acid were unsuccessful. An unnamed substance was found, however, which considerably enlarged the killing properties of tobacco dust, lice being killed by this mixture, "T 14", in 2½–3½ hours. In addition to killing horse lice, the preparation has proved efficient against lice and fleas on dogs, cats, and pigeons [see also HEIDEGGER—*V. B.* **13.** 32].—J. B. CRAGG.

LOMAS, H. (1942). **A Treatment for Mange in Horses.**—*Vet. J.* **98.** 139. **970**

The well known treatment of mange with sulphur has been modified by the inclusion of sinapis in the ointment or paste which is used. This substance produces a temporary paralysis of the sensory nerve endings, and so blocks the stimuli which cause the animal to rub the affected areas. The prescription for the paste (all parts by weight) is :– sinapis (alb. et nig.) 7 parts; sulph. sublim. 5 pts; sulph. nig. 3 pts; p. antim. nig. 1 pt. The powders are mixed well and, before use, one measure of the mixture is mixed into a paste with three measures of cold water, or four measures if the horse is thin skinned. The affected areas are first clipped and singed and then the paste is lightly smeared, but not rubbed, over them. Four dressings are necessary, at intervals of four days. The paste tends to cake on the skin, and if this happens it should be powdered in the fingers. The treated areas are not washed until after the last dressing.—D. G. DAVEY.

COSTIGAN, S. M. (1942). **Possible Irritating Effects from Dusting Baby Chicks and Growing and Adult Fowls with Hypochlorite Powders.**—*Amer. J. vet. Res.* **3.** 235–239. **971**

Repeated dusting for several successive days of healthy chicks and adult fowls with hypochlorite powders caused no respiratory inflammation. Growth and production were not impaired. The dusting of birds infected with infectious bronchitis, laryngotracheitis, coryza, or lung lesions of pullorum disease tended to improve the conditions rather than to worsen them.—D. D. OGILVIE.

ALLEN, R. W., OLIVIER, L., & PETERSON, H. O. (1942). **The Efficacy of Phenothiazine for the Removal of the Cecal Worm of Chickens.**—*Vet. Med.* **37.** 412–415. **972**

The authors confirm that phenothiazine is a very good anthelmintic for the removal of *Heterakis* from chickens. A dose of 0·5 g., given as a tablet or in a capsule on each of four successive days, eliminated 99·8% of the worms, and a dose of 0·1 g., administered by the same schedule, eliminated 91·7%. The latter dose seems about the lowest which is of much use, as a dose of 0·05 g., repeated on each of four successive days, eliminated only 12·9% of the worms. These percentages refer to the efficacy of phenothiazine against adult *Heterakis*, and it appears that the drug is much less effective against immature forms. Some evidence was obtained that about 50% of *Ascaridia galli* may also be removed. No toxic effects of the treatment were noted.—D. G. DAVEY.

WIRTH, D. (1942). Chenopodiumöl als Wurmmittel bei Pferden. [**Oil of Chenopodium as an Anthelmintic for Horses**].—*Wien. tierärztl. Mschr.* **29.** 321–329. **973**

W. discusses the anthelmintic action of oil of chenopodium in horses, pointing out that the difference between anthelmintic and toxic doses is dangerously small. "Kebal II", a special preparation of oil of chenopodium, had given very good results against roundworms in dogs, and this paper describes trials with the same product in horses.

"Kebal II", mixed with castor oil, was tested in 40 horses and proved effective against strongylid worms

in doses of 15–20 ml. repeated after 5–8 days, but was less effective against ascarids. Dosage was contra-indicated in fevered, greatly emaciated, or weakly animals, but ordinarily no more than a transient loss of appetite and, in some cases, a slight rise in temperature and increase in pulse rate was caused. When liquid paraffin was used instead of castor oil these toxic symptoms did not appear (in the seven horses tested). It is suggested that paraffin would limit absorption of the anthelmintic. [See also PECK—(1938). *Vet. Rec.* **50.** 505.]—H. E. HARBOUR.

BROOKS, T. J., Jr., & BROWN, H. W. (1942). **The Anthelmintic Activity of Ficin in Dogs.**—*J. Amer. vet. med. Ass.* **101.** 250–253. **974**

Treatment of eight dogs with Merck's ficin (extract of latex of *Ficus* trees) was successful in removing 100% of the ascarids, 96% of the whipworms, and 13·6% of the hookworms present, but was ineffective against *Dioctophyme*, *Dirofilaria*, and *Dipylidium*. Its ineffectiveness against *Dipylidium*, confirmed by *in vitro* tests, is an interesting point as it is a powerful proteolytic enzyme. It is not effective against worms other than those in the alimentary canal because it is not absorbed. The doses used were 1,000 mg. of ficin per kg. body weight for puppies and 750 mg. per kg. body weight for adult dogs. The substance was given orally as a 15% suspension in water. Treatment included preliminary starvation and, 3–4 hours after dosing, purging with Epsom salts. The authors do not, however, recommend ficin as an anthelmintic because it digests injured intestinal mucosa which "makes the enzyme potentially very dangerous in the event that intestinal damage is present".—D. G. DAVEY.

JONES, A. T. (1942). **Treatment of Phosphorus Burns.**—*Brit. med. J.* Aug. 29th. 244–245. **975**

The characteristics of lesions caused by phosphorus burns are described together with the method of treatment. The essential factor in the treatment of all chemical burns is the immediate flooding of the affected area with water or sodium bicarbonate solution. Subsequent swabbing with 1% $CuSo_4$ solution will reveal the presence of any large P particles left which may be picked off. Daily dressing with acriflavine emulsion 1 : 1,000 is advocated, followed by application of "boroseptic" ointment as soon as healing begins.
—R. ALLCROFT.

See also absts. **819** (antibacterial action of vitamin C), **1008** (anthelmintics—research in Texas).

HYGIENE AND PUBLIC HEALTH

SERRES, J. R. (1938). Defensa sanitaria de la ganadería Argentina. La acción del Estado. **[Disease Control for Argentine Livestock].**—*J. agron. vet., Univ. B. Aires, 1937.* pp. 93–113. **976**

This is a general discussion of the present position of animal health in Argentina. S. calls for greatly improved animal health services, which, he says, have lagged behind the great increase in numbers and importance of livestock in the country. He asks for a sufficient number of regional veterinary officers to control transport and markets and to ensure the proper disinfection of railway waggons. He advocates the establishment of a station for the study of ticks and of a council for dealing with epizootics.—M. WATSON.

FLEISCHHAUER, G., GEBAUER, B., & v. HAYN, L. (1942). Weitere Untersuchungen über die Alkoholvorbehandlung von Milchproben zur Verbesserung des Nachweises von Abortus-Bang- und Tuberkelbakterien mit Hilfe des Meerschweinchen-Versuches. **[Further Research on Alcohol Treatment of Milk Samples to Facilitate Demonstration of *Brucella abortus* and Tubercle Bacilli by the G. Pig Test].**—*Z. Fleisch- u. Milchhyg.* **52.** 227–228. **977**

Further evidence [see also *V. B.* **10.** 548.] is presented in favour of the method of detecting *Br. abortus* and *Mycobacterium tuberculosis* in milk samples by treating the milk with alcohol before injection into g. pigs. The technique differs slightly from the original in that the samples and reagents are cooled to cold-room temperature before mixing, the injections being carried out within two hours. The authors claim that this method avoids any harmful effects on *Br. abortus*.

Comparison of the different methods was made on 171 samples with the following results :– positive when normal saline was the vehicle, 25·7% ; positive when alcohol treatment alone was used, 34·5% ; positive by both methods 39·8%.

In 1,706 experiments in which 3,414 g. pigs were injected with alcohol-treated milk the high mortality rate recorded by SÖNTGEN [*V. B.* **12.** 314.] was not observed. In order to get the most satisfactory results the authors recommend the use of both methods simultaneously, a pair of g. pigs per sample being used.

The individual susceptibility towards the two species of bacteria is discussed ; 36–48% failed to develop lesions when injected with samples containing a mixture of the organisms.—N. S. BARRON.

RIVAS, J. G., & HEREDIA, S. E. (1940). Las leches pasteurizadas de la Ciudad de Buenos Aires. **[Studies on Pasteurized Milk Supplies in Buenos Aires].**—*J. agron. vet., Univ. B. Aires, 1939.* pp. 53–87. **978**

The authors examined samples of pasteurized milk from seven sources in the city of Buenos Aires. They found that modified Schern-Gorli and methylene-blue reduction tests were not reliable indicators that pasteurization had been effective. The phosphatase test, on the other hand, proved satisfactory and the determination of organisms of the coliform group proved an efficient indication of whether the conditions of pasteurization were satisfactory.

The process of pasteurization was not always carried out under the proper conditions of time and temperature in some establishments. There were cases in which the milk became contaminated after being pasteurized. The authors call for an official control laboratory to ensure proper pasteurization of the city's milk.—MILLER WATSON.

BOURMER. (1942). Der Luftschutz in den Schlacht- und Viehhöfen. **[A.R.P. in Abattoirs and Livestock Markets].**—*Gasschutz u. Luftschutz.* **12.** 139–144. **979**

Abattoirs and cattle markets should have reinforced shelters with sufficient accommodation for the protection of personnel. [B. obviously discusses this question in relation to the larger undertakings when accommodation would be required for scores of persons rather than for small numbers.] The rooms must be, if not bomb proof, at least splinter proof and must be provided with heat and ventilation systems as well as with strong exit passages. A first-aid room with medical attention provided should be prepared in, for instance, a strongly constructed cellar. It should contain a separate entrance and exit, waiting rooms, treatment room, dressing rooms, shower baths, rest rooms, water closets, a common room for sanitary personnel, and a machine room. Entrance and exit should have gas-proof air

locks. The working arrangements for use of this shelter accommodation are described, also some building construction details including plumbing, electric wiring, and telephone apparatus.

To minimize the danger of ammonia poisoning from damaged cold-store apparatus, the machine room should be walled in completely and arrangements should be made to stop the pumping machinery during air raid alarms.

Rescue and damage-preventing parties should have energetic leaders and all unnecessary impediments such as parked vehicles, bicycles etc. should be eliminated from the roads, passages, and spaces within the area of the buildings.

Fire-extinguishing apparatus should be in charge of the most suitable persons (engineers, etc.) and must be kept at perfection standard and be frequently tested.

If possible the buildings should possess an independent water supply and sand for fire bombs and there should be a good warning system with a watch tower.

Blackout problems are discussed at length and are rather difficult to follow where mention is made of special materials and paints. Meat inspection and good workmanship really demand normal daylight.

German abattoirs and cattle markets are prominent targets and are very difficult to camouflage.

The decontamination of live animals and meat must be carried out according to the decree [not available] of June 26th, 1940 of the Ministry of the Interior. Chemical analytical work is done only by the H.K.U. (*Hauptkampfstoffuntersuchungsstelle*) [chief war gas examination centre] and biological examinations by the *LS Veterinäruntersuchungsstelle* [A.R.P. veterinary examination centres]. The exact functions of these places are not defined].—J. E.

LACHENSCHMID, M. (1941). Ein Beitrag zur praktischen Brauchbarkeit der verbesserten Löfflerschen Malachitgrünplatte nach Wolffram für den Fleischvergifternachweis. **[Use of Löffler's Malachite Green Plate as Improved by Wolffram for the Demonstration of Meat-Poisoning Organisms].**—*Z. Fleisch- u. Milchhyg.* **51.** 321. **980**

The carcasses of five cows were examined bacteriologically for the presence of meat-poisoning organisms; one positive case was detected by the use of Loffler's malachite green plates, as modified by WOLFFRAM by the addition of 1·5% lactose and 4% phenol red solution. The medium is stated to be good for the identification of these organisms.—J. CSONKA.

I. MEYER, R. (1940). Zur Statistik der Fleischvergiftungen im Jahre 1939. **[Meat Poisoning Statistics for 1939].**—*Z. Fleisch- u. Milchhyg.* **51.** 16–20. **981**

II. MEYER, R. (1941). Zur Statistik der Fleischvergiftungen im Jahre 1940. **[Meat Poisoning Statistics for 1940].**—*Ibid.* 301–303 and 318–320. **982**

I. Forty-eight outbreaks of meat poisoning occurred with 1,390 cases of illness and ten deaths, eight of which were due to botulism. 75·5% of the cases occurred between May and October. 33% of all outbreaks were due to the consumption of sausages. *Salmonella enteritidis* and *S. typhi-murium* were the organisms most commonly demonstrated. In two outbreaks, proper inspection would have led to condemnation of the carcasses; in three cases the butcher was found to be a carrier of *S. typhi-murium* and in six cases unhygienic conditions in the shops were responsible and appropriate measures were taken. Legislative control over the consumption of duck eggs led to a reduction in the number of outbreaks from infected eggs, although 315 cases occurred with three deaths. *S. typhi-murium* could be demonstrated in each case.

II. Sixty-seven outbreaks of meat poisoning with 2,684 cases and 24 deaths were reported in 1940, the figures for 1939 being doubled. Pork and sausage meat caused most of the outbreaks; the number of cases due to veal, fish, and poultry was lower as these commodities were becoming scarce. 12% of the outbreaks were due to emergency slaughter of sick animals without proper inspection. Botulism again caused the highest mortality, *viz*, 66·7% of all deaths. Nine outbreaks affecting 503 people were caused by duck eggs used in foodstuffs in a way contrary to law. The increase in the number of cases is attributed to negligence, disregard of regulations, and " black market " transactions.—ANN F. RUSSELL.

ERNST, O. (1942). Über symptomlos verlaufende Gärtner-Jena-Infektionen. **[Symptomless *Salmonella enteritidis* Infections].**—*Arch. Hyg., Berl.* **128.** 69–79. **983**

A record of the finding of *S. enteritidis* infection in 82 out of 221 persons comprising nursing and kitchen staff and patients in a sanatorium. The strain of the organism was weak and all the infected persons appeared healthy.

The possibility is discussed that such an infection might give rise to an outbreak of enteritis in particularly susceptible persons.—J. E.

SAVAGE, W. (1942). **Paratyphoid Fever: An Epidemiological Study.**—*J. Hyg., Camb.* **42.** 393–410. **984**

A series of 40 outbreaks of paratyphoid B fever in Great Britain was studied.

It is stated that, except in a few isolated instances, chiefly in dogs in Scandinavia, *Salmonella paratyphi B* occurs only in human beings. The vehicles of infection were mainly those in which multiplication of the organism could take place and this fact, taken in conjunction with the low infectivity rate, suggests that massive doses must be ingested before infection occurs in human beings.—E. J. M. HAYWARD.

See also absts. **995-1007** (municipal veterinary reports), **1014** (sanitary inspection), **985** (milk testing), **792** (swine erysipelas in meat), **796**, **800** (salmonella in meat), **880**, **881** (cysticercosis), **782-784** (TB. control).

TECHNIQUE AND APPARATUS

BARKWORTH, H., & DAVIS, J. G. (1942). **A Cheap and Efficient Medium for the Plate Count of Milk.**—*J. Hyg., Camb.* **42.** 218–223. **985**

The methylene-blue and the resazurin tests, to a very large extent, have replaced the plate count for assessing the hygienic quality of milk, but for certain purposes the plate-count method is still used and it is considered the best test for pasteurized milk.

Two media are officially recognized for plating, one of " yestrel " agar and the other of mill agar; both contain 0·5% peptone, which renders the preparation of media now somewhat expensive, and economy in the use of peptone is desirable owing to the present shortage of this material. It was not found practicable, however, to dispense entirely with peptone, and ease in counting could not be obtained with a medium containing less than 0·2% peptone.

In media containing milk, lab-lemco was found to give, on the whole, higher counts than one prepared with " yestrel " and the following was found to be a useful

substitute for the official media :– 0·1% lab-lemco, 0·2% peptone, 1·5% agar fibre, and 1·0% skim milk, the last being added after final filtration.—H. E. B.

BRODIE, J. (1942). **Modified Leifson Media for the Isolation of *B. dysenteriae* and Pathogenic Members of the Colon-Typhoid Group.**—*J. Path. Bact.* **54.** 499–509. **986**

For the enrichment of dysentery bacilli and pathogens of the colon-typhoid group, the authors devised a serum peptic digest broth, containing sodium tauroglycocholate, ferric ammonium citrate, trisodium citrate, yeast extract, lactose, and neutral red. The enrichment was followed by direct plating on a solid medium of similar nature, in which rosolic acid took the place of neutral red. This medium did not interfere with the slide agglutination technique, and favoured the growth of S forms, without, however, enhancing the serological specificity of the salmonella. The medium, employed as a semi-solid agar, did not cause motile organisms to become deflagellate.—ISOBEL W. BURTON.

KNOX, R., GELL, P. G. H., & POLLOCK, M. R. (1942). **Selective Media for Organisms of the Salmonella Group.**—*J. Path. Bact.* **54.** 469–483. **987**

Different media and methods for isolating organisms of the salmonella group from faeces and urine were tested, with a view to finding those that were suitable for direct plating and indirect culture, and which, at the same time, did not interfere with the slide agglutination technique. In making comparisons, the authors took care to see that specimens were as completely identical as possible, taking into account such factors as size of inoculum, length of incubation, type of specimen, and the character of the flora at the various stages of the disease.

Eosin brilliant-green agar, modified by the addition of methylene blue, was found to be a good medium for isolating *S. paratyphi B* and several other salmonella, and to be moderately satisfactory for *S. typhi*. Cultures grown on it were excellent for the slide agglutination test. Wilson and Blair's medium was most suitable for the direct isolation of *S. typhi*, but with cultures grown on it, slide agglutination with colonies was practically impossible. Tetrathionate broth gave satisfactory results in the enrichment of *S. paratyphi B* and moderate results with *S. typhi*. It compared favourably with brilliant green peptone water.

The authors advocate the use of several selective agents for routine use, and consider that eosin brilliant-green methylene-blue agar, and tetrathionate agar should be used in conjunction, since many organisms (pathogens and non-pathogens) grow well on one medium, but not on the other.

Formulae are given for all the media used.

—ISOBEL W. BURTON.

ALBRECHT, B. (1941). Vergleichende Untersuchungen über Verschlüsse von Kulturröhrchen. **[Comparative Trials of Plugs for Culture Tubes].**—*Dtsch. tierärztl. Wschr.* **49.** 1–4. **988**

Two substitutes for the ordinary cottonwool plug in culture tubes are described. The better of the two is the co-called "Helmröhrchen", which may be adapted for aerobic or anaerobic incubation; it consists essentially of a glass cap, shaped rather like an inverted thistle-funnel, to fit over the end of the tube; the "neck" may be plugged at will by plasticine. The other type of cap, not much inferior to the first, is the "Kapsenburg" cap, made of aluminium. Useful figures in the article illustrate the methods of use.

—E. COTCHIN.

*KOTLÁN, S., & VAJDA, T. (1941). **[Is the Enrichment Method Suitable for the Diagnosis of Liver Fluke Infestation ?]**—*Állatorv. Lapok.* No. 4. p. 19. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 260]. **989**

The authors found that flotation with potassium carbonate is the most convenient enrichment method and gives the highest egg counts in all cases. They point out that eggs may be absent from the faeces if the invasion is a recent one and the parasites have not yet reached maturity.—ANN F. RUSSELL.

AVERY, J. L. (1942). **An Apparatus for the Warm-Air Drying of a Water Suspension of Ground Trichina Larvae for Use as an Antigen.**—*Proc. helminth. Soc. Wash.* **9.** 26–27. **990**

Filtered air under pressure is passed into a warming chamber and through metal tubes leading to within an inch of Petri dishes containing the material to be dried.

—M. L. BINGHAM.

See also abstr. **788, 789** (culture of tubercle bacilli), **810** (of brucella), **821** (of trichomonads), **874** (rearing of ticks), **829** (virus inactivation), **854** (diagnosis of swine fever), **848, 849** (of porcine encephalomyelitis), **855** (of distemper), **887, 888** (of helminth infestation), **977** (bacteria in milk), **978** (pasteurization).

REPORTS

I. EIRE. (1941). **[Report of] Veterinary College of Ireland [1940-41].**—*Rep. Minist. Agric. Eire, 1940–41.* pp. 41–49 and [31]–[32]. **991**

II. EIRE. (1941). **[Report of] Veterinary Research Laboratory [1940-41].**—*Ibid.* pp. 81–82. **992**

III. EIRE. (1941). **Report of the Agricultural Department, University College, Dublin, for the Year 1940-41.**—*Ibid.* pp. [1]–[15]. Items of veterinary interest p. [7]. **993**

IV. EIRE. (1941). **[Report of work under] Diseases of Animals (Ireland) Acts, 1894-1938 [during 1940-41].**—*Ibid.* pp. 124–131 and [61]–[65]. **994**

I. Streptococcal METRITIS appears to be a common cause of infertility in mares. Uterine swabs from infertile mares, taken over a period of six years, showed that streptococci were present in approximately 30% of cases.

In the parasitology section, complete analysis of the specimens according to the animals concerned is shown. It is held that, with present difficulties in the provision of adequate feeding stuffs and the reduction of areas under grazing, parasitic infestations are likely to increase. Proper precautions should include mixed grazing, stock rotation (allowing young stock on fresh pastures before the adults), and regular treatment of all farm stock with suitable anthelmintics.

II. A summary is given of work done on BOVINE CONTAGIOUS ABORTION. A new type of vaccine was tested by vaccinating heifers when sexually mature.

III. The importance is emphasized of a deficiency of vitamins A and D in pigs. Poultry feeding was studied. A concentrated ration containing a high proportion of meat meal fed to poultry caused a disorder of the kidneys which resulted in death. Reduction in the proportion of meat meal or replacement by other high protein foods prevent the development of the disease. Further investigation is proceeding.

IV. An account is given of an outbreak of FOOT AND MOUTH DISEASE which occurred after 12 years of freedom from the disease. Only one outbreak (1938–39) of SWINE FEVER has occurred since January, 1934.

—H. E. BYWATER.

Extracts from Municipal Veterinary Reports, Great Britain

1. Birmingham (City). (1941). **60th Annual Report of the Chief Veterinary Officer For the Year 1940.** [de Vine, B.] pp. 27. [8vo]. **995**
2. Birmingham (City). (1942). **61st Annual Report of the Chief Veterinary Officer For the Year 1941.** [de Vine, B.] pp. 24. [8vo]. **996**
3. Blackburn (County Borough). (1941). **[Report on] Food Supply [1940].**—*Rep. Hlth Blackburn, 1940.* pp. 5-7. **997**
4. Cardiff (City and Port). (1941). **[Report on] Food Inspection [1940].**—*Rep. publ. Hlth Dep. Cardiff, 1940.* pp. 50–57. **998**
5. Glasgow (Corporation). (1940). **Annual Report of Chief Veterinary Inspector for 1940.** [Abbott, S. G.] pp. 6. [fcp] [Typescript]. **999**
6. Glasgow (Corporation). (1941). **Annual Report of the Chief Veterinary Inspector for 1941.** [Abbott, S. G.] pp. 5. [fcp] [Typescript]. **1000**
7. Manchester (City). (1940). **Report of the Markets Committee For the Year Ending 31st March, 1940.** pp. 13. Manchester : Henry Blacklock & Co. [8vo] **1001**
8. Manchester (City). (1941). **Report of the Markets Committee For the Year ending 31st March, 1941.** pp. 12. Manchester : Henry Blacklock & Co. Ltd. [8vo]. **1002**
9. Newcastle upon Tyne (City and County). (1941). **Annual Report of the Veterinary Officer for the Year 1940.** [Thornton, H.] pp. 23. Newcastle : Christie, Malcolm Ltd. [8vo]. **1003**
10. Preston (County Borough). (1940). **Report for the Year 1940 under the Diseases of Animals Acts and Orders and the Agriculture Act, 1937 (Part IV).** [Finch, R.] pp. 3. [fcp] [Mimeographed]. **1004**
11. Preston (County Borough). (1941). **Report for the Year 1941 under the Diseases of Animals Acts and Orders and the Agriculture Act, 1937, (Part IV).** [Finch, R.] pp. 4. [fcp] [Mimeographed] **1005**
12. Preston (County Borough). (1941). **[Report on] Inspection and Suspervision of Food.** [1940].—*Rep. med. Offr. Hlth Preston, 1940.* pp. 29–32. **1006**
13. Preston (County Borough). (1942). **[Report on] Inspection and Supervision of Food [1941].**—*Rep. med. Offr Hlth Preston, 1941.* pp. 26–28. **1007**

	Milk Supply					Meat Inspection (Whole Carcasses Condemned for TB.)		Notifiable Diseases (Still Prevalent)		
	Herds			Milch Cows	Milk Samples containing Tubercle Bacilli	Bovines	Swine	Tuberculosis	Anthrax	Swine Fever
	Attested	Accredited	Ungraded							
Birmingham (1)	1	15	24	774	12 (23%)	495	273	10	0	3
		70	134	3,709						
Birmingham (2)		15	25	774	10 (12·5%)	906	118	7	1	2
		60	97	2,896						
Blackburn (3) ...						152				
Cardiff (4) ...	2	14			3 (3%)	189	93			
Glasgow (5) ...						742	42			
Glasgow (6) ...						720	14			
Manchester (7)						903	121	15	0	12
Manchester (8)						859	110	14	0	9
Newcastle (9) ...	1	7	7	468	4 (40%)	416	65	4	0	4
Preston (10 & 12)		6	12	475	17 (7%)			7	0	2
Preston (11 & 13)		6	13	469	3 (6%)			9	1	0

Additional Notes

1 & 2. Birmingham.—Veterinary staff—seven. Figures are given of examinations for the presence of tubercle bacilli, of milk coming into the city. In 1940, 244 (10·9%) of 2,237 samples examined were found to be infected ; in 1941 the figures were 189 of 2,377 (8%). In 1940, 694 cows in city herds were tuberculin tested, 34 (5%) reacting ; in 1941, 40 (7%) of 594 reacted. Reports are also given on the work and accounts of the Stables Subcommittee, concerning draught horses in the possession of the city corporation.

3. Blackburn.—No whole-time veterinary staff.

4. Cardiff.—Veterinary staff—one.

5 & 6. Glasgow.—Veterinary staff—three.

7 & 8. Manchester.—Veterinary staff—four.

9. Newcastle.—Veterinary staff—one. Meat inspection and scheduled disease outbreak statistics for 1921–40 are given.

10–13. Preston.—The reports of the M.O.H. contain data on milk supply, those of the veterinary officer data on scheduled diseases.

U.S.A. (1941). **Report of the Chief of the Bureau of Animal Industry, 1941.** [Mohler, J. R.] pp. 92. Washington, D.C. : U.S. Govt. Printing Office. [8vo] [10 cents]. **1008**

The normal activities of the bureau continued to function satisfactorily ; the U.S.A. remained free from major epizootics throughout the year. There were 4,428 regular civil service employees and of these 2,081 were in the professional and scientific service, 93% being veterinarians. Expenditure amounted to over $15,953,356. 568 veterinarians graduated from the ten accredited veterinary colleges.

Animal Disease Station [Eichhorn, A.]—Experimental proof has been obtained of the safety of vaccination against Brucellosis with strain 19. The strain was passaged through seven cattle in doses sufficient to cause abortion and no increase in virulence occurred. Nine pregnant cows in contact when the first seven aborted, did not abort. No hygienic methods of preventing infection were used. In no case was

Brucella abortus recovered from the colostrum, placenta, or uterine discharges of the cows that aborted.

In experimental exposure of sheep to aborting heifers, the pregnant ewes resisted infection. Pregnant ewes, artificially infected, showed a high degree of resistance, very few aborting.

No abortions occurred among 13 cattle and 16 sheep exposed to infection with *Br. melitensis* by contact with 26 infected goats over a period of two years.

In the avian TUBERCULOSIS experiment [see *V. B.* **12.** 360.], 23 of 28 swine exposed to tuberculous chickens developed slight lesions. Four cattle also exposed for 18 months gave a reaction to avian tuberculin, but showed no tuberculous lesions.

In studies on MASTITIS, it was found that in a herd of 115 cows, 32 had streptococci in one or more quarters; *Str. agalactiae* was present in 23 of these, *Str. uberis* in eight, and unidentified streptococci in eight. Some animals harboured two species of streptococci in different quarters. Yellow colony haemolytic staphylococci were found in 65 quarters of 37 cows. White, weakly haemolytic staphylococci were found in 48 quarters of 30 cows.

Experimental infection of udders with staphylococci of bovine origin was successful in 16 of 19 injected, one or more times, with dilute suspensions of the organism. In a cow injected once in four quarters with staphylococci from a human source, infection was set up in all four quarters. All these infections tended to disappear in 4–8 weeks, whereas *Str. agalactiae* infection tends to be permanent.

Investigations were continued into the AVIAN LEUCOSIS complex. Leucosis strain A was propagated in duck, turkey, guinea fowl, pheasant, and quail embryos, it being propagated in chick embryos for 30 passages by intravenous inoculation of infected blood without any apparent change in virulence.

In cross-immunity and serum-neutralization tests, no serological or immunological relationship was found between the viruses of equine and avian ENCEPHALOMYELITIS.

Studies in artificial insemination showed that fluid of ground, developing chick embryos 10–12 days old was more than twice as effective in preserving semen as any diluent previously used.

ANIMAL HUSBANDRY AND ANIMAL NUTRITION DIVISIONS [MCPHEE, H. C., & ELLIS, N. R.]—Work continued at Cornell University, in co-operation with the department, on nicotinic acid deficiency, known as BLACKTONGUE in dogs and PELLAGRA in human beings. The condition was produced experimentally in silver foxes. The symptoms are those of a purulent stomatitis followed by gastro-intestinal haemorrhage, and collapse. Nicotinic acid cures animals treated before the stage of collapse. Other investigations on animal husbandry and nutrition carried out by these departments are discussed in detail.

FIELD INSPECTION DIVISION [FLADNESS, S. O.]—There was no serious outbreak of ANTHRAX and no cases of GLANDERS were diagnosed in animals tested. There was a recrudescence of DOURINE in Maricopa county, Arizona, on two Indian reservations. Tests of 8,000 horses showed that 5·5% were affected. In the rest of the state only 0·6% of 11,500 horses were infected. All reactors were destroyed. In another outbreak in San Diego county, California, 3,000 horses showed only 0·4% infected. In the eradication of SHEEP SCAB, 14,073,591 sheep were inspected and dippings of 1,497,149 were supervised. Most of the infection exists in the mid-western farming region. In the eradication of MANGE in cattle, 1,769,187 cattle were inspected and 90,088 dippings supervised. Inspections of all animals imported and their quarantine at the ports numbered 815,329. The majority were cattle from Canada and Mexico. Rejections consisted mainly of 34,033 cattle from Mexico rejected because of tick infestation. 9,548 animals were inspected before exportation from the U.S.A.

INTER-STATE INSPECTION DIVISION [MILLER, A. W.]—18,798,025 cattle and 21,282,586 sheep were inspected, as well as 30,429,259 pigs of which 203,868 were immunized against SWINE FEVER and disinfected. 1,780 cattle and 317,943 sheep were dipped.

MEAT INSPECTION DIVISION [JOSS, E. C.]—Inspections were carried out at 668 establishments located in 257 urban areas. Details are given in nine tables of the results of the inspections of meat and meat products amounting to a total of 10,514,837,866 lb. in weight of processed food examined, and over 82,000,000 animals examined *ante-* and *post-mortem*.

PATHOLOGICAL DIVISION [SCHOENING, H. W.]—The 26 complement-fixation tests of sera of suspected GLANDERS cases were negative. One sample of human blood serum yielded a positive reaction.

Additional evidence was obtained of the stimulating effect of traces of zinc on the growth of human strains of *Mycobacterium tuberculosis* on ammonium malate and ammonium glutamate media.

Experiments on rabbits with cultures of *Streptococcus genitalius* isolated from the genital tract of mares resulted in three cases of clinical eye lesions, in one of which the symptoms resembled those of PERIODIC OPHTHALMIA. Field investigations gave evidence that environment may be of primary importance in the spread of this disease. Studies of eyes from infected horses revealed the presence of peculiar coarse fibrillar structures in the nonpigmented ciliary epithelial layer.

The causative organism of SWINE ERYSIPELAS [*Erysipelothrix rhusiopathiae*] was recovered from 76% of pigs with arthritis. A considerable increase in virulence of the organism was obtained after several passages by culture on chick embryos 9–11 days old. Vaccines prepared from chick-embryo cultures and inactivated with phenol and formalin were harmless to pigeons but failed to protect against infection.

It was shown that NECROTIC ENTERITIS of swine can be produced by *Salmonella cholerae-suis* (strain 4623).

ANAPLASMOSIS was first diagnosed in 1940 and has now been positively diagnosed in 22 states. Sodium cacodylate was found ineffective in treatment. A technique in which the red blood cells are haemolysed and the blood centrifuged to obtain the parasites in the sediment has proved successful for diagnosis.

Blood-serum samples of 22,417 equine animals showed 1·98% to be infected with DOURINE.

Of brain specimens examined of 36 dogs, nine cats, one fox, one rat, and one cow, only one, from a dog, was positive for RABIES.

There were 4,187 deaths among the 16,941 cases of EQUINE ENCEPHALOMYELITIS reported. Approximately a million horses were given prophylactic vaccine intradermally and no untoward reactions were reported. In investigations on insects as carriers of virus, results were negative. A great similarity in lesions was found in horses experimentally infected with Eastern and Western strains of E.E. virus.

Details are given of the studies in progress on EQUINE INFECTIOUS ANAEMIA.

A strain of AUJESZKY'S DISEASE virus was recovered from the brain of a cow from North Carolina.

Investigation of poisoning by *Psilostrophe sparsiflora* shows that it is poisonous to cattle as well as to sheep. Poisoning by *Conium maculatum* (poison or spotted hemlock) shows that the plant is most toxic when the fruits

are maturing but are still green.

In tests of commercially prepared sera, vaccines, and bacterins, 10·8% were unsatisfactory; 2·53% of viruses and 18·3% of the cultures being produced for the preparation of veterinary biologics were also unsatisfactory.

Toxicological investigations are reviewed and also the work of the branch laboratories at Ames, Chicago, Denver, Lincoln, and Auburn, Ala.

Division of Tick Eradication and Special Diseases [MacKellar, W. M.]—Only ten counties were in quarantine for tick infestation at the end of the year. 12,410,587 cattle and 1,117,873 horses and mules were dipped or inspected. In Puerto Rico and the Virgin Islands, *Boophilus annulatus* var. *australis* is prevalent and 870,882 sheep and goats were treated. Details are also given of Hog Cholera control. Educational work among pig breeders and pig keepers is important in this respect.

Tuberculosis Eradication Division [Wight, A. E.]—12,229,499 tuberculin tests were carried out on cattle (0·3% reactors). There were 695 veterinarians employed on TB. eradication and expenditure amounted to about $5,460,000. At the end of the year 62,696,167 cattle were under supervision for TB. eradication. In the period 1917–42, 3,808,903 tuberculin-reacting cattle were removed from the herds. Avian TB. is controlled by veterinary observation of poultry flocks. 16,217,662 fowls in 11 states were observed. Infection was reported on 5,627 farms. In addition, 18 bureau veterinarians were on eradication duty in midwestern and north central states, where the disease is most prevalent, and found infection on 2,511 of 11,454 farms inspected.

Johne's Disease was found to exist to a slight degree in 13 states.

Brucellosis control and eradication involved blood tests of 7,737,341 cattle (2·4% reactors). The antigen used is supplied by the animal disease station of the bureau. The state-accredited herds contained 1,200,000 cattle and the officially supervised herds contained 13,933,000 cattle. The vaccination of calves is now incorporated in the eradication scheme of 34 states.

Division of Virus-Serum Control [Skidmore, D. I.]—Supervision was exercised over 77 establishments, 36 producing Swine Fever serum and virus, 35 producing other biological products, and six producing both classes of products. Tables give details of output, and of products rejected, imported, and exported.

Zoological Division [Schwartz, B.]—Phenothiazine treatment successfully controlled horse strongyles, but ascaris infections were not affected. A foal born 17 days after the last treatment of the dam with phenothiazine began to pass strongyle eggs when 27 days old.

Cows immune to Trichomoniasis in one breeding period may subsequently contract severe infection from infected bulls.

Anaplasmosis was transmitted from one infected to three healthy bovines by *Tabanus sulcifrons* [see *V. B.* **12.** 361]. Studies on the aetiology of anaplasmosis in 16 bovines indicated that a lightly staining, rod-like structure, with a dense knob-like portion at one end, may be the precursor of the anaplasm. These bodies were found in the blood plasma and attached to the red blood cells. There was a definite correlation between the numbers of these structures attached to erythrocytes at any one time and the number of small anaplasms in the erythrocytes on the following day. This phenomenon was again noted in relapses occurring after recovery was well advanced and anaplasms had not been seen for a month.

Coccidiosis investigations in lambs and calves are reviewed. In lambs there were very few clinical cases when the animals were fed an adequate diet and the feeding troughs were cleaned daily. Treatment of lambs already passing oocysts with 1 g. doses of sulphaguanidine daily controlled the disease. Naturally acquired infections in calves are more often fatal, or affect development more adversely, when they occur 2–3 weeks after birth. Species more often involved are *Eimeria ellipsoidalis*, *E. cylindrica*, and *E. subspherica*. Mortality can be reduced by simple preventive measures such as segregation by ages, special protection of calves under three weeks old, and the frequent removal of excrement and dirty bedding.

Liver Fluke studies near Angleton, Texas showed that *Stagnicola bulimoides techella*, the most important host of *Fasciola hepatica* in the Gulf Coast region, is active in the wet season and dormant in the dry summer season. Droughts are more lethal to adult than to young snails. Snails of the genera *Fossaria* and *Stagnicola* resist frost. Both young and mature *Stagnicola* spp. survive penetration by large numbers of miracidia, whereas *Fossaria* spp. are killed even when only small numbers penetrate. In studies on the life-history of *F. hepatica*, a specimen of the snail *Pseudosuccinea columella* infected with a single miracidium developed 415 rediae, and from these 527 cercariae developed. Encysted cercariae survive freezing if the temperature does not drop below 17°F. Migration of the fluke through the intestinal wall into the peritoneal cavity and thence through the liver capsule into the liver took 79–101 days in sheep and 65–74 days in rabbits. *Dicrocoelium dendriticum* (the lancet fluke) is established as a parasite of cattle in two central New York counties.

Sheep with Nodular Worm Infestation develop a resistance to subsequent infection. Mention is made of "pencil faeces", due to the nodules' interference with the normal working of the walls of the alimentary tract.

It is suggested that the massive Trichina Infections occasionally seen in pigs may be due to the ingestion of an infested mouse or rat. Muscles from dogs and cats have also been found to be infested.

Free-living stages of *Strongyloides ransomi* on shaded, small, grassy plots migrate up to 4½ in. up the grass blades. Eggs deposited on grass by free-living female worms hatched, but a large proportion died. Infective larvae are concentrated on the lower 2 in. of the grass blades. Larvae fail to survive more than three weeks. The eggs are highly susceptible to drying and rises of temperature. A few minutes at 131°F. destroys them.

Administration of Phenothiazine as an anthelmintic to horses often causes anaemia and icterus of short duration [see also *V. B.* **12.** 361]. In cattle it was effective against *Haemonchus*, *Oesophagostomum*, and *Trichostrongylus* in doses as low as 0·1 g. per lb. body weight and was quite as effective whether given in the feed or in capsules, with or without a preliminary period of fasting. The drug is harmless when given to pregnant ewes in doses of 25 g. Tests show that sufficient phenothiazine is ingested by sheep, when 10% of the drug is present in a salt mixture, to prevent the development of infective larvae in their faeces. Limited tests on poultry show that the drug is not very effective for the removal of caecal worms.

Suitable mixtures of stannous tartrate and synthetic pelletierine hydrochloride effectively removed *Raillietina cesticillus* and *Hymenolepis carioca* from fowls. *R. cesticillus* was also removed by mixtures of a small amount of synthetic pelletierine hydrochloride with stannous oleate, oxalate, hydroxide, or tartrate.

Formation of coccidial oocysts in chicks was completely inhibited by admixture of 2% of sulphaguanidine to the mash and partly inhibited by a 1% admixture. After the appearance of bloody faeces a 5% admixture had no effect on the course of the disease.—J. A. G.

U.S.A., NEVADA. (1942). **[Report of] Division of Animal Industry [1940-42].** [EARL, W. B.]—*Bienn. Rep. Dep. Agric. Nev., 1940–42.* pp. 9–22. 1009

The state was again free from dangerous epizootics during the biennium. Diseases causing occasional local loss are anthrax, blackleg, bacillary haemoglobinuria in cattle, anaplasmosis, swine fever, equine encephalomyelitis and respiratory diseases of horses. Rabies has not appeared for many years.

Action was taken in conjunction with the U.S. Bureau of Animal Industry to control BOVINE BRUCELLOSIS and DOURINE, the former disease by alternative schemes one of which included calfhood vaccination and the other not. 105 herds with 4,000 cattle were incorporated in the former scheme and 54 herds with 1,245 cattle in the latter. The reactor percentage was low in both groups. 39 herds with 1,685 cattle were in process of accreditation.

DOURINE was observed in Nevada in 1930 and a quarantine area was declared in order to prevent the spread of the disease outside it. As the disease was scarce and was believed to occur over a wide ranching area, the work of testing every horse was not undertaken and up to 1940 the exact infection rate was unknown. Owing, however, to increased demands for horses for war purposes, it was decided to eradicate the infection, so the work of testing every equine in the quarantine area was undertaken. During the period, 9,250 animals were tested [results not given]. Complete eradication is expected very soon.

The incidence of bovine TUBERCULOSIS has remained below 0·5% since 1933.—J. E.

Extracts from Annual Reports of Agricultural Experimental Stations U.S.A. [The matter given here is a bare outline of the work done. When papers by the staffs of these stations are published, abstracts are prepared from them and included in the *Veterinary Bulletin* as a matter of routine. Details of the titles of these reports will be found in *Index Veterinarius.*] 1010

ALABAMA, 1940.—A brief account is given of studies on the occurrence, epidemiology, and inter-host relationships of nematode parasites of fowls.

ARIZONA, 1940–41.—There are notes on the following :– stomach worms in young cattle, bacillary HAEMOGLOBINURIA in cattle, warble-fly larvae in range cattle, poisonous plants, nutritional studies on range herbage, and breeding of fowls for resistance to FOWL PARALYSIS.

COLORADO, 1940–41.—LISTERELLOSIS in sheep was diagnosed for the first time in the state. Progress was made in studies on the pathogenesis of overeating (ENTEROTOXAEMIA) in lambs. Fowls were found to require 1,000 parts of iodine per billion parts of the ration to grow normally and half this amount when in production. Unfinished studies on iodine requirements of sheep, urinary CALCULI, nematodes and the fringed tapeworm (*Thysanosoma actinioides*), and COCCIDIOSIS are also referred to. A two-year study was completed on inbreeding, using a Hampshire ram which was a carrier of a parrot-mouth genetic factor.

GEORGIA, 1940–41.—Infestation of sheep with lice (*Trichodectes ovis*) and with stomach worms and the nodular worm caused some trouble. The usual treatments are described.

IDAHO, 1941.—MASTITIS studies included work on the serology of *Streptococcus agalactiae* and on gramicidin therapy. Hygienic measures for control of SWINE ERYSIPELAS are listed. Blood serology in porcine BRUCELLOSIS was studied. Cocci were isolated from chicks showing lesions typical of PULLORUM DISEASE : a new disease is thought to be implicated. Progress in reducing disease loss in the station poultry flock is described. Phosphorus deficiency was traced as the cause of beef cattle failing to fatten on a particular ration : particulars of the work are given. Parallel work on lamb rations is reported. Urinary CALCULI in sheep were found to occur in dietary conditions in which vitamin A was plentiful. Two sterile rams were treated with ascorbic acid injections, but did not derive any benefit.

MINNESOTA, 1940–41.—The work done is reported in the form of summaries of published articles (journal references given) : these have been separately abstracted in the *Vet. Bull.* A list of new research projects is also given.

MISSISSIPPI, 1940–41.—A few nutritional trials are outlined, with special reference to vitamins A and E.

NEW JERSEY, 1940–41.—Elementary advice on MASTITIS and BRUCELLOSIS is given. The relative qualities of fowl pox and pigeon pox vaccine for the control of FOWL POX are discussed. Miscellaneous information is given on the breeding physiology of bulls. It is claimed that injections of posterior pituitary hormone into sows at farrowing increased the percentage of live births. The advantages of rapid high-temperature pasteurization over the slow method are stated.

NEW YORK STATE, 1940–41.—Corynebacterium infection of the udder was studied as well as the survival time of *Streptococcus pyogenes* in cheese.

NEW YORK STATE, Cornell University, 1940–41.—Many years' work has shown that group B streptococci of bovine and of human origin are essentially the same. Studies on streptococci with reference to dehydrogenase systems, respiratory mechanism, riboflavin reduction, arginine hydrolysis, and polysaccharide synthesis are summarized. Comparative trials on sheep of copper sulphate + nicotine sulphate, tetrachlorethylene in mineral oil, and phenothiazine as anthelmintics gave closely similar results. Wheat germ oil appeared to prevent STIFF LAMB DISEASE, which can be induced by a particular diet, details of which are given. Pituitary hormone and oestradiol benzoate were ineffective in procuring conception in slow-breeding cows. Technical points in artificial insemination are discussed.

OKLAHOMA, 1938–40.—Research on fly transmission of ANAPLASMOSIS is summarized. Pregnant ewes tolerated ½ lb. of cottonseed meal in their daily ration. A ration containing adequate but not excess minerals was found to prevent PEROSIS in young fowls.

PENNSYLVANIA, 1940–41.—Research data are given on the carotene requirement of calves during winter. In tests of sulphanilamide on healthy cows, toxic symptoms were produced by doses of 5 and 10 g. per 100 lb. body weight. Poultry nutrition studies are reviewed.

SOUTH DAKOTA, 1940–41.—Work was done on "BLOAT" in cattle, vitamin D requirements of cows, prevention of ALKALI DISEASE (SELENIUM POISONING) by arsenic dosage or feeding linseed, SORGHUM (HCN) POISONING, the mechanism of OAT HAY POISONING, and chenopodium as an anthelmintic for sheep : chopped chenopodium plant gave good results.

TENNESSEE, 1940.—Huddleson's rapid test gave results almost identical with those of the slow tube test in two years' diagnostic studies on BOVINE BRUCELLOSIS.

The importance of good and sufficient food for fertility in cocks was demonstrated. Studies on phosphorus in the nutrition of rats and calves are reported.

TEXAS, 1941.—Trypaflavine infusions gave good results in MASTITIS, but short-wave diathermy was useless. The BRUCELLOSIS control status of the station herds is described. For the control of ENTEROTOXAEMIA in lambs, the vaccination of pregnant ewes with zinc-chloride-precipitated toxoid of *Clostridium welchii* Type D appeared beneficial. Research on fly and tick vectors of ANAPLASMOSIS was unfruitful. Miscellaneous observations on HELMINTHIASIS in cattle and sheep are recorded, together with tests of phenothiazine and several new agents as anthelmintics in lambs. Phenothioxine proved toxic and of no anthelmintic value. Powdered *p*-chlorodiphenyl was effective in three out of four lambs treated but it also proved toxic. Sodium thiosulphate solution reduced egg counts by 28·5–75%. Zinc oxide in water reduced egg counts by 88–100%, but caused a profuse diarrhoea which predisposed to blowfly " strike ". Research data on sporadic BOVINE ENCEPHALOMYELITIS (" BUSS DISEASE ") are summarized : a virus seems to be involved. KERATITIS of cattle has been successfully transmitted by ocular and nasal pus, but no microbial agent has been discovered. The history of inheritance of CRYPTORCHISM and attempts to breed it out of the station goat flock are reported. The value of phosphorus supplements to range cattle was conclusively proved after four years' study. The breeding performance of cows on three levels of carotene intake is described. Several local plants were tested for toxicity.

WASHINGTON, 1940–41.—An electrical conductivity test of abnormal milk is referred to. Lead arsenate was effective for removing tapeworms from sheep and phenothiazine for removing stomach worms from sheep and caecal worms from poultry. Mapharsen was useful in curing BLACKHEAD in turkeys. Choline (0·2%) and liver meal (15%) in the diet prevented PEROSIS in turkeys. Work on the toxic properties of *Amsinckia intermedia* is summarized.

WISCONSIN, 1940–41.—The advantage of allowing pigs access to sunlight was demonstrated in a controlled experiment. Advice is given on the use of local limestone as a mineral source for swine. The addition of common salt to the water and food of fowls is said to have prevented CANNIBALISM, as also did the substitution of oats or oatmeal for part of the maize in a ration originally containing no other cereal. PEROSIS was prevented by sunlight plus a ration not too high in phosphorus, even when no manganese was separately given [see also PENQUITE *et al.*—*V. B.* **11.** 627].—J. E.

—. (1942). Uebersicht über den Stand der ansteckenden Krankheiten der Haustiere in der Schweiz im Jahre 1941. **[Review on Infectious Diseases of Animals in Switzerland in 1941].**—*Schweiz. Arch. Tierheilk.* **84.** 84–85. **1012**

This annual summary on livestock diseases in Switzerland for 1941 takes the form of a table with figures showing numbers of herds/animals infected, in each Canton and in each month, with anthrax, swine erysipelas, swine fever and swine plague, fowl cholera and fowl plague, blackleg, foot and mouth disease, agalactia in sheep and goats, mange in horses, sheep and goats, and bee diseases.—J. E.

BOOK REVIEWS

ESPE, D. [Assistant Professor in Dairy Husbandry at Iowa State College]. (1941). **Secretion of Milk.** pp. ix + 294. 65 figs. Ames, Iowa : Iowa State College Press. [2nd Edit.] [8vo] [$3.00]. **1013**

The general form and content of this book has changed little since the first edition [see *V. B.* **10.** 226]. The section dealing with the hormonal control of lactation contains almost all the relevant information ; one would expect this as it was read before publication by Dr. C. W. TURNER.

It is apparent that the exact mechanism of milk secretion is still little understood. It is obvious on reading the chapter on " Miscellaneous Factors Related to Milk Secretion " that the author has had much practical experience of dairy husbandry ; the relation of various methods of " drying up " cows to the occurrence or prevention of mastitis is discussed. Throughout the book there are many useful tables and graphs and the list of 981 references with full titles is a valuable feature. Much scattered information, particularly the results of work at the U.S.A. agricultural experiment stations, which is not always readily available in Great Britain, has been brought together.

The book is based on a course of lectures intended to " focus the training received in anatomy, physiology, and nutrition as problems dealing with the normal functioning of the mammary gland ", but it is much more than a students' manual ; it is a monograph which will prove invaluable to all those interested in applied veterinary physiology, and in the varied problems of milk production.—JOHN FRANCIS.

CLAY, H. H. [F.R.San.I., F.I.S.E.]. (1942). **The Sanitary Inspector's Handbook. A Manual for Sanitary Inspectors and other Public Health Officers.** pp. xxii + 534. 97 figs. London : H. K. Lewis & Co. Ltd. [5th Edit.] [8vo] [18s.] **1014**

This book may well be described as the standard text-book for students taking the certificate of the Royal Sanitary Institute and the Sanitary Inspectors' Joint Examination Board, and qualifying for appointment as sanitary inspector in England and Wales. It is, however, much more than this, for it serves as a sound reference book containing practical knowledge on a large variety of the subjects comprising an important part of the activities of public health departments.

It presents concise information on such subjects as smoke abatement, offensive trades, housing, water supplies, ventilation, heating, lighting, factories, workshops, drainage and sewage disposal, and the control of infectious diseases. It also has chapters devoted to food inspection, dairies, cowsheds and milkshops, abattoirs, and knackers' yards.

The section on meat inspection will appear rather sketchy to veterinary readers who will notice several small inaccuracies and ambiguities but, although sanitary inspectors are expected to have some knowledge of meat inspection, there is a tendency for most authorities to appoint as meat inspectors only those sanitary inspectors who have obtained an additional certificate in the inspection of meat and other foods.

The last decade has been noteworthy for the progress which has been made in the law as it affects public health and, in order to keep the work up to date, it has been necessary to produce no less than five editions of this book since its original publication some nine years ago.

The book has always found a ready sale and can be recommended to the veterinary reader as a convenient and sound reference to those subjects appertaining to human sanitation with which his training renders him less familiar than he is with the subjects of meat and milk inspection.—H. E. BYWATER.

3554—Wt.P3—Dd.178—750—4/43—H. R. G. Ltd.—G.13.

Printed under the authority of His Majesty's Stationery Office by H. R. GRUBB, LTD., Croydon

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

The latest list of the publications indexed for this purpose was included in *Index Veterinarius*, Vol. 6, No. 1 (issued December, 1938) and also circulated with the *Veterinary Bulletin*, Vol. 9, No. 1.

About 10,000 references are indexed each year, each reference being suitably cross-indexed alphabetically under subjects and under names of authors.

As each half-yearly issue consists of a single complete alphabetical index of subjects and authors' names, a search through it involves a minimum of trouble, and all information required is readily found.

Each number contains the indexing done by the Bureau during the previous half-year, *i.e.*, No. 1, issued in December, covers the indexing done during the previous January to June.

The dates of issue of the two numbers of each volume are as follows:—

No. 1.—Issued December. Indexing period previous January—June.
No. 2.—Issued June. Indexing period previous July—December.

Vols. 1 to 3 (1933, 1934 and 1935) of the Index were produced on a duplicator; from Vol. 4 onwards it has been printed.

Vols. 1 to 5 were issued in quarterly parts; the issue is now half-yearly.

Annual Subscription, £5.

A limited number of copies printed on one side only are available for those who wish to mount references on cards.

Orders may be sent to:—

CENTRAL SALES BRANCH,
(IMPERIAL AGRICULTURAL BUREAUX),
AGRICULTURAL RESEARCH BUILDING,
PENGLAIS,
ABERYSTWYTH,
WALES.

Imperial Bureau of Dairy Science

Shinfield, Reading, England

DAIRY SCIENCE ABSTRACTS

A comprehensive collection of abstracts of current literature dealing with milk and dairy products: husbandry, technology, control and standards, economics, physiology, bacteriology and mycology, chemistry and physics. Published quarterly. Subscription 25s. per volume of 4 numbers (5s. discount to British subjects who subscribe direct): single copies, 7s. 6d.

Technical Communications

No. 1. The phosphatase test for control of efficiency of pasteurisation. H. D. Kay, R. Aschaffenburg and F. K. Neave. Price 2s. (postage 2d. extra).

Imperial Bureau of Animal Nutrition

Rowett Institute, Aberdeen, Scotland

NUTRITION ABSTRACTS AND REVIEWS

Consists of abstracts of papers published throughout the world dealing with the subject of nutrition in all its aspects. They are arranged under the following sections: technique (including chemical and experimental methods), composition of food, physiology of nutrition, human diet in relation to health and disease (including dietary studies, food economics, deficiency diseases and therapeutic dietetics), feeding of animals and book reviews. Each issue also contains a review article on some subject of general interest.

Published quarterly. Annual subscription 42s.

Technical Communications

These are published at irregular intervals; lists and prices on application.

Imperial Bureau of Animal Breeding and Genetics

King's Buildings, University of Edinburgh

ANIMAL BREEDING ABSTRACTS

This journal contains abstracts and reviews of current publications bearing on animal breeding, genetics, production, sex physiology, reproduction and cognate subjects. Published quarterly. Subscription rate, 25s. per annum.

Occasional Communications and *Bibliographies* are also issued from time to time.

Imperial Bureau of Pastures and Forage Crops

Agricultural Research Building, Penglais, Aberystwyth

This Bureau covers current literature on grassland, forage crops and plant biological research, and issues two quarterly publications:—

HERBAGE ABSTRACTS and HERBAGE REVIEWS

The latter publication contains original articles and reviews on topics which merit more detailed consideration than can be given in the former.

Subscription rates: *HERBAGE ABSTRACTS*. 25s. per annum (single parts, 7s.).
HERBAGE REVIEWS. 15s.* per annum (single parts, 4s.).

*A reduction of 5s. will be made when *HERBAGE ABSTRACTS* is also ordered.

At irregular intervals larger monographs are published on miscellaneous subjects in the form of *Bulletins*.

All correspondence regarding subscriptions to journals and sales of occasional publications should henceforth be addressed to: Central Sales Branch (Imperial Agricultural Bureaux), Agricultural Research Building, Penglais, Aberystwyth.

Printed in Great Britain by H. R. Grubb, Ltd., Poplar Walk, West Croydon